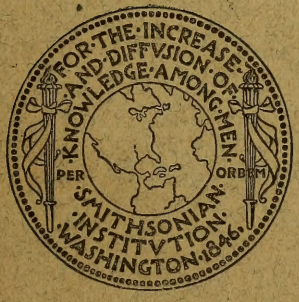
REPORT OF THE SECRETARY

OF THE

SMITHSONIAN INSTITUTION

FOR THE YEAR ENDING JUNE 30

1910



(Publication 2002)

WASHINGTON
GOVERNMENT PRINTING OFFICE
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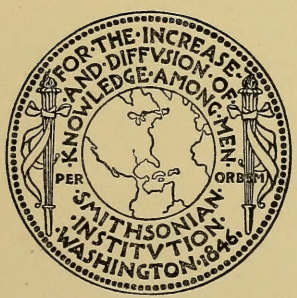

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REPORT

OF THE

SECRETARY OF THE SMITHSONIAN INSTITUTION

CHARLES D. WALCOTT,

FOR THE YEAR ENDING JUNE 30, 1910.

To the Board of Regents of the Smithsonian Institution:

GENTLEMEN: I have the honor to submit a report showing the operations of the Institution during the year ending June 30, 1910, including the work placed under its direction by Congress in the United States National Museum, the Bureau of American Ethnology, the International Exchanges, the National Zoological Park, the Astrophysical Observatory, and the regional bureau of the International Catalogue of Scientific Literature.

In the body of this report there is given a general account of the affairs of the Institution, while the appendix presents more detailed statements by those in direct charge of the different branches of the work. Independently of this the operations of the National Museum and of the Bureau of American Ethnology are fully treated in separate volumes.

THE SMITHSONIAN INSTITUTION.

THE ESTABLISHMENT.

By act of Congress approved August 10, 1846, the Smithsonian Institution was created an establishment. Its statutory members are "the President, the Vice-President, the Chief Justice, and the heads of the executive departments."

THE BOARD OF REGENTS.

The Board of Regents consists of the Vice-President and the Chief Justice of the United States as ex officio members, three members of the Senate, three Members of the House of Representatives, and six citizens, "two of whom shall be resident in the city of Washington, and the other four shall be inhabitants of some State, but no two of them of the same State."

There has been no change in the personnel of the Board since my last report, Representatives John Dalzell, James R. Mann, and William M. Howard; and Hon. John B. Henderson, and Dr. Alexander Graham Bell, whose terms of office expired during the year, having been reappointed as Regents.

Meetings of the Regents were held on December 14, 1909, and on February 10, 1910, the proceedings of which will be printed as customary in the annual report of the Board to Congress.

Although occurring a few days after the close of the fiscal year, I may properly record here the death on July 4, 1910, of the Chancellor of the Institution, Melville W. Fuller, Chief Justice of the United States. Adequate reference to this sad event will be made in my next report to the Board.

GENERAL CONSIDERATIONS.

I have called attention heretofore to the influence that the Smithsonian Institution has had in the development of science in this country. That its usefulness is not restricted to this country is constantly evidenced in many ways. But the achievements that the Institution might accomplish, and that the scientific world expects of it, and the general good that it might do in the promotion of the welfare of the human race, continues to be greatly limited by the lack of ample funds to carry forward worthy lines of exploration and research that are constantly being presented for consideration.

During the past year the Institution's activities have been increased to some degree by gifts for the promotion of certain special lines of study, particularly in biological research.

Among the important works that might be undertaken I would especially call attention to the great advantage to this country and to the world that would result from the establishment of a national seismological laboratory under the direction of the Smithsonian Institution.

IMPORTANCE OF A NATIONAL SEISMOLOGICAL LABORATORY.

NEED.

The immense destruction of life and property by certain large earthquakes emphasizes the importance of investigations which may lead to a reduction of the damage of future earthquakes. The science of seismology is in its infancy and it is not always evident what lines of investigation will yield the most important results, hence the importance of developing larger knowledge of seismology in all directions. As an example: It was not at all realized that the accurate surveys of the Coast and Geodetic Survey in California would demonstrate that the great earthquake there in 1906 was due to forces set up by slow movements of the land which have probably been going

on for a hundred years. We have learned that slow movements of the land must precede many large earthquakes, and monuments are now being set up in California to enable us to discover future movements of the land and thus to anticipate future earthquakes. This, I think, is the most important step so far taken toward the prediction of earthquakes.

COOPERATION.

Seismological work is too large to be prosecuted successfully by the universities, but requires some central office under government supervision to encourage theoretical and observational studies and to collect and study information from all available sources. The various departments of the Government could offer material help. The Weather Bureau could furnish information regarding felt shocks and could maintain seismographs at some of their stations. Postmasters throughout the country could also report felt earthquakes. The Coast and Geodetic Survey could maintain instruments and adapt their surveys and tidal observations to the detection of slow earth movements. The army could give information regarding earthquakes felt at their outlying posts, the navy regarding earthquakes felt at sea. The Geological Survey could furnish information regarding the geological structure of earthquake regions.

SEISMOLOGICAL CLEARING HOUSE AND FOREIGN COOPERATION.

The seismological laboratory would collect and study all this information. It would serve as a clearing house for the whole country. It would also be the link to connect seismological work in this country with the work done in other parts of the world. Its director should represent the United States in the International Seismological Association which this country has joined through the Department of State.

GOVERNMENT WORK IN FOREIGN COUNTRIES.

Germany, Italy, Hungary, Roumania, Bulgaria, and Japan have maintained for some years offices for the collection and study of earthquake material. Chile and Mexico have recently established them. The work in England is under the direction of the Royal Society. Many other countries maintain stations for seismological observations. This is the only important country subject to destructive earthquakes whose government does not support the study of earthquakes.

WORK OF THE LABORATORY.

1. Collection and study of all information regarding earthquakes in the United States and its possessions. The preparation of maps showing the distribution of earthquakes and their relation to geological structure.

2. The study of special regions which are subject to frequent earthquakes to determine as far as possible where future earthquakes are likely to occur.

3. The study of the origins of earthquakes occurring under the neighboring oceans.

4. An organization of commissions to study in the field the effects produced by large earthquakes.

5. The study of proper methods of building in regions subject to earthquakes. This will require experiment.

6. The improvement of instruments for recording earthquakes.

7. Other theoretical studies.

8. The dissemination of information regarding earthquakes by bulletins or otherwise.

EQUIPMENT.

There will be required an office, a laboratory, a photographic room, a work shop, and a special instrument house. The building of this latter house and the general equipment would cost about $6,000.

ORGANIZATION AND ANNUAL EXPENSES.

In the beginning there would be required a director, an assistant, a mechanic, a stenographer, and it would be necessary to purchase books, instruments, and material for the laboratory, etc. It is estimated that $20,000 would equip the laboratory and meet all the expenses for the first year. After that the work will probably expand and the amount applied to equipment for the first year would meet the requirements for extension for some time after.

FINANCES.

The permanent fund of the Institution and the sources from which it was derived are as follows:

Deposited in the Treasury of the United States.

Bequest of Smithson, 1846		$515,169.00
Residuary legacy of Smithson, 1867		26,210.63
Deposit from savings of income, 1867		108,620.37
Bequest of James Hamilton, 1875	$1,000.00	
Accumulated interest on Hamilton fund, 1895	1,000.00	
		2,000.00
Bequest of Simeon Habel, 1880		500.00
Deposit from proceeds of sale of bonds, 1881		51,500.00
Gift of Thomas G. Hodgkins, 1891		200,000.00
Part of residuary legacy of Thomas G. Hodgkins, 1894		8,000.00
Deposit from savings of income, 1903		25,000.00
Residuary legacy of Thomas G. Hodgkins		7,918.69
Total amount of fund in the United States Treasury		944,918.69
Registered and guaranteed bonds of the West Shore Railroad Company (par value), part of legacy of Thomas G. Hodgkins		42,000.00
Total permanent fund		986,918.69

The sum of $251.95 was received during the year as the first payment of a bequest of $500 made by the will of Mr. William Jones Rhees, for many years an officer of the Institution. This fund has not been invested.

In addition to the above there are four pieces of real estate bequeathed to the Institution by the late R. S. Avery, some of which yield a nominal rental and all are free from taxation.

That part of the fund deposited in the Treasury of the United States bears interest at 6 per cent per annum, under the provisions of the act organizing the Institution and an act of Congress approved March 12, 1894. The rate of interest on the West Shore Railroad bonds is 4 per cent per annum.

The income of the Institution during the year, amounting to $107,483.68, was derived as follows:

Interest on the permanent Foundation, $58,375.12; contributions from various sources for specific purposes, $43,230.95, and from other miscellaneous sources, $5,877.61; all of which was deposited in the Treasury of the United States to the credit of the current account of the Institution.

With the balance of $32,176.70, on July 1, 1909, the total resources for the fiscal year amounted to $139,660.38. The disbursements, which are given in detail in the annual report of the executive committee, amounted to $104,295.50, leaving a balance of $35,364.88 on deposit June 30, 1910, in the United States Treasury.

The Institution was charged by Congress with the disbursement of the following appropriations for the year ending June 30, 1910:

International Exchanges	$32,000
American Ethnology	43,000
Astrophysical Observatory	13,000
National Museum:	
Furniture and fixtures	200,000
Heating and lighting	60,000
Preservation of collections	250,000
Books	2,000
Postage	500
Building repairs	15,000
Moving collections to new building	4,000
National Zoological Park	95,000
International Catalogue of Scientific Literature	6,000
Total	720,500

EXPLORATIONS AND RESEARCHES.

As far as the resources of the Institution and contributions from individuals has permitted, various scientific explorations and researches have been carried on during the past year, and it is gratifying to report that the Institution's activities in these lines have been

somewhat more extended than in previous years. Were ample funds available to be administered under the Smithsonian Institution, the scientific work of the Government might often be supplemented by original researches of a character that could hardly be undertaken by the Government, and which would be of great service to humanity and to science.

Besides operations undertaken by the Institution itself, important biological, ethnological, and astrophysical researches have been carried on under its direction through the National Museum, the Bureau of American Ethnology, and the Astrophysical Observatory, which are discussed elsewhere in this report.

SMITHSONIAN AFRICAN EXPEDITION.

In my last report there was given an account of the setting out of the expedition to Africa in charge of Col. Theodore Roosevelt and of the results accomplished prior to June 30, 1909. This expedition, which was entirely financed from private sources through contributions by friends of the Smithsonian Institution, landed at Mombasa on April 21, 1909, and arrived at Khartoum on March 14, 1910. The collections made by it reached Washington in excellent condition and are now deposited in the National Museum. The series of large and small mammals from East Africa is, collectively, probably more valuable than is to be found in any other museum of the world. The series of birds, reptiles, and plants are also of great importance, and the study of the material representing other groups will furnish interesting results.

Colonel Roosevelt's report on the work of the expedition is as follows:

KHARTOUM, *March 15, 1910.*

SIR: I have the honor to report that the Smithsonian African expedition, which was intrusted to my charge, has now completed its work. Full reports will be made later by the three naturalists, Messrs. Mearns, Heller, and Loring. I send this preliminary statement to summarize what has been done; the figures given are substantially accurate, but they may have to be changed slightly in the final reports.

We landed in Mombasa on April 21, 1909, and reached Khartoum on March 14, 1910. On landing, we were joined by Messrs. R. J. Cuninghame and Leslie J. Tarlton; the former was with us throughout our entire trip, the latter until we left East Africa, and both worked as zealously and efficiently for the success of the expedition as any other member thereof.

We spent eight months in British East Africa. We collected carefully in various portions of the Athi and Kapiti plains, in the Sotik and around Lake Naivasha. Messrs. Mearns and Loring made a thorough biological survey of Mount Kenia, while the rest of the party skirted its western base, went to and up the Guaso Nyero and later visited the Uasin Gisbu region and both sides of the Rift Valley. Messrs. Kermit Roosevelt and Tarlton went to the Leikipia Plateau and Lake Hannington, and Doctor Mearns and Kermit Roosevelt made

separate trips to the coast region near Mombasa. On December 19 the expedition left East Africa, crossed Uganda and went down the White Nile.

North of Wadelai we stopped and spent over three weeks in the Lado, and from Gondokoro Kermit Roosevelt and I again crossed into the Lado, spending eight or ten days in the neighborhood of Rejaf. In Gondokoro we were met by the steamer which the Sirdar, with great courtesy, had put at our disposal. On the way to Khartoum we made collections in Lake No, and on the Bahr-el-Ghazal and Barel-Zeraf. We owe our warmest thanks for the generous courtesy shown us and the aid freely given us, not only by the Sirdar, but by all the British officials in East Africa, Uganda, and the Sudan, and by the Belgian officials in the Lado; and this, of course, means that we are also indebted to the home governments of Egypt and Belgium.

On the trip Mr. Heller has prepared 1,020 specimens of mammals, the majority of large sizes; Mr. Loring has prepared 3,163, and Doctor Mearns, 714, a total of 4,897 mammals. Of birds, Doctor Mearns has prepared nearly 3,100; Mr. Loring, 899; and Mr. Heller about 50, a total of about 4,000 birds.

Of reptiles and batrachians, Messrs. Mearns, Loring, and Heller collected about 2,000.

Of fishes, about 500 were collected. Doctor Mearns collected marine fishes near Mombasa and fresh-water fishes elsewhere in British East Africa, and he and Cuninghame collected fishes in the White Nile. This makes in all of vertebrates: Mammals, 4,897; birds, about 4,000; reptiles and batrachians, about 2,000; fishes, about 500; total 11,397.

The invertebrates were collected carefully by Doctor Mearns, with some assistance from Messrs. Cuninghame and Kermit Roosevelt. A few marine shells were collected near Mombasa, and land and fresh-water shells throughout the regions visited, as well as crabs, beetles, millipeda, and other invertebrates.

Several thousand plants were collected throughout the regions visited by Doctor Mearns, who employed and trained for the work a Wunyamvezi named Makangarri, who soon learned how to make very good specimens and turned out an excellent man in every way.

Anthropological materials were gathered by Doctor Mearns, with some assistance from others. A collection was contributed by Major Ross, an American in the government service at Nairobi.

I have the honor to be, very truly, yours,

THEODORE ROOSEVELT.

Hon. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

STUDIES IN CAMBRIAN GEOLOGY AND PALEONTOLOGY.

During the field season of 1909 I continued my investigations in the geology of the Cambrian and pre-Cambrian rocks of the Bow River Valley, Alberta, Canada, and on the west side of the Continental Divide north of the Canadian Pacific Railway in British Columbia.

The first camp was made on the shores of Lake Louise, southwest of Laggan. From this point work was carried forward on the high mountains east, northeast, and southwest of the lake, and side trips made to the valley of the Ten Peaks and across the Bow Valley in the vicinity of Ptarmigan Lake. Many fine photographs were secured, both of the beautiful scenery and the geological sections, which

are wonderfully well shown above timber line on the higher ridges and peaks.

The measurements of the Cambrian section were carried down to a massive conglomerate which forms the base of the Cambrian system in this portion of the Rocky Mountains. This discovery led to the study of the pre-Cambrian rocks of the Bow River Valley. These were found to form a series of sandstones and shales some 4,000 feet in thickness, that appear to have been deposited in fresh-water lakes prior to the incursion of the marine waters in which the great bed of conglomerate and the Cambrian rocks above were deposited.

Completing the reconnoissance survey of the Bow River area, camp was moved to the Yoho River Canyon. In the Yoho River Canyon, one of the most picturesque and instructive areas in the great Yoho National Park of Canada, a study was made of the north side of the President Range and numerous pictures taken in that vicinity, also from Burgess Pass, north of Field.

A most interesting discovery of unique Cambrian fossils was made near Burgess Pass. Quite a number of specimens were collected before snow drove the party back to Field. Three days were spent on Mount Stephen at the famous trilobite beds before breaking up camp on September 8.

As opportunity offered during the fall and winter, field notes were written up and studies made of the sections obtained during the summer. As the results of these studies two papers are in press in the Smithsonian Miscellaneous Collections, volume 53: No. 6, "Olenellus and other Genera of the Mesonacidæ," and No. 7, "Pre-Cambrian Rocks of the Bow River Valley, Alberta, Canada." Preliminary studies were also made of the unique crustacean fauna found in the middle Cambrian rocks of Burgess Pass.

GEOLOGICAL INVESTIGATIONS IN THE FAR EAST AND IN NEWFOUNDLAND.

In my last report mention was made of a grant to Prof. Joseph P. Iddings for carrying on geological investigations in the Far East. As one of the results of his work the Institution has received an interesting collection of Manchurian Cambrian fossils, as well as collections of fossils from Japan and Java.

The Institution made a small grant to Prof. Charles Schuchert, of Yale University, to enable him to carry on certain geological studies and to obtain a collection of Cambrian fossils from the west coast of Newfoundland, the south shore of Labrador, and the Strait of Belle Isle; also collections to illustrate the transition fauna between the Cambrian and Ordovician.

STUDY OF AMERICAN MAMMALS.

Through the generosity of a friend of the Institution, Mrs. E. H. Harriman, there has been provided a trust fund yielding an income of

$12,000 a year, which is placed under the direction of the Smithsonian Institution for the specific purpose of carrying on scientific studies, particularly of American mammals and other animals, the donor specifying Dr. C. Hart Merriam as the investigator to carry on the work during his lifetime.

BIOLOGICAL SURVEY OF THE PANAMA CANAL ZONE.

The Institution has had in contemplation for some time several important scientific explorations, and it is gratifying to state that it now seems possible that one of them—an exhaustive biological survey of the Panama Canal Zone—will be undertaken in the winter of 1910–11. Definite plans for this survey have not been decided upon at present, but these are now under consideration and it is hoped that all the arrangements may be completed and the work put in hand in a few months.

It is particularly important to science that a biological survey of the Canal Zone be made at this time, as it appears without question that it would yield important scientific results, both as regards additions to knowledge and to the collections of the United States National Museum and other museums. While the Isthmus is not so well endowed with large forms as the great continental areas, such as Africa, southern Asia, and some other regions, yet its fauna and flora are rich and diversified. The collecting which has been carried on there has been on such a rather limited scale, and chiefly along trade routes, that an extensive and thorough survey would surely produce new scientific information of great value.

A part of the fresh-water streams of the Isthmus of Panama empty into the Atlantic Ocean and others into the Pacific Ocean. It is known that a certain number of animals and plants in the streams on the Atlantic side are different from those of the Pacific side, but as no exact biological survey has ever been undertaken the extent and magnitude of these differences have yet to be learned. It is also of the utmost scientific importance to determine exactly the geographical distribution of the various organisms inhabiting those waters, as the Isthmus is one of the routes by which the animals and plants of South America have entered North America and vice versa. When the canal is completed the organisms of the various watersheds will be offered a ready means of mingling together, the natural distinctions now existing will be obliterated, and the data for a true understanding of the fauna and flora placed forever out of reach.

By the construction of the Gatun dam a vast fresh-water lake will be created, which will drive away or drown the majority of the animals and plants now inhabiting the locality, and quite possibly exterminate some species before they become known to science.

The National Museum at present has practically no Panama mammals. The birds now in the collection are chiefly from along the line of the railroad and from Chiriqui. It has comparatively few reptiles. The fresh-water fishes are poorly represented in the collections and are of special importance for comparison with South American forms. Land and fresh-water mollusks are much needed. The National Herbarium is poorly supplied with Panama plants; in fact, they are at present practically "a negligible quantity," and the American herbariums taken together do not contain a sufficient amount of material to form the basis of a general flora of Panama, which is a work much needed.

ANTIQUITY OF MAN IN SOUTH AMERICA.

In March, 1910, the Institution directed Dr. Aleš Hrdlička, Curator of the Division of Physical Anthropology, United States National Museum, to proceed to South America and Panama Canal Zone for the purpose of making anthropological researches, and particularly to undertake investigation into the question of man's antiquity in Argentina. A grant was also made to enable Mr. Bailey Willis, of the United States Geological Survey, proceeding on his way to South America in the interest of the world's topographical map, to cooperate with Doctor Hrdlička in his researches in Argentina, for it was appreciated that the problems to be met with were to an important degree of a geological nature.

The undertaking of the investigation was especially due to Mr. W. H. Holmes, Chief of the Bureau of American Ethnology, whose observations during a visit to Argentina in 1908 made apparent the far-reaching importance of the data being collected bearing on human antiquity in South America.

The subject of man's antiquity in South America dates from the meager reports concerning the scattered remains in the Lagoa Santa caves in Brazil, the casual Seguin finds in the province of Santa Fe, Argentina, and the Moreno collection of old Patagonian material in the valley of Rio Negro, and it has assumed a special importance during the last decade through a relatively large number of reports by Argentinian scientists, but particularly by Prof. F. Ameghino, of new finds of the remains of ancient man and of traces of his activities. Some of these more recent finds were so interpreted that, if corroborated, they would have a most important bearing not merely on man's early presence in the South American Continent, but on the evolution and the spread of mankind in general.

Under these conditions, and in view of the fact that some of the reports were not fully satisfactory as to their anatomical or geological details, it was deemed necssary to send down competent men who might subject the whole matter to critical revision.

It is gratifying to state that on arriving at Argentina and explaining their mission the Smithsonian representatives were afforded by the Argentinian Government, as well as by the Argentinian men of science, all facilities needed for the examination of the specimens preserved in various institutions, as well as for the prosecution of their field work. Professor Ameghino and his brother, Carlos, gave particular aid, accompanying Doctor Hrdlička and Mr. Willis personally for over three weeks along the coast from place to place where the supposedly ancient remains were discovered.

The researches occupied nearly two months. Every specimen relating to ancient man that could still be found was examined, and every locality of importance where the finds were made was visited and investigated. The evidence gathered, unfortunately, does not sustain a large part of the claims that have been made. The human bones and the archeological specimens which should represent geologically ancient man agree in all important characteristics with the bones and work of the American Indian; and the finds, while often in close relation with early Quaternary or Tertiary deposits, bear, so far as observed, only intrusive relations to these deposits. Furthermore, there are specimens the original sources of which are not so well established that scientific deductions of great consequence can be safely drawn therefrom, even though they present some morphological peculiarities.

The expedition secured numerous geological, paleontological, and anthropological specimens, some of which throw much light on the question of the antiquity of the finds to which they relate. These specimens are being identified and described in the National Museum. Doctor Hrdlička and Mr. Willis will present in due time a detailed report on their investigations.

Following the researches in Argentina, Doctor Hrdlička visited several of the anthropologically important localities on the coast of Peru and made large collections of skeletal material, which will help to settle definitely the racial problems of these regions, and will have an important bearing on the anthropology of the western part of South America.

Further explorations and collections, necessarily limited, were made by Doctor Hrdlička in Panama and Mexico. In the latter country the principal results of the visit were the opening, at the invitation of the Mexican authorities, of a highly interesting sepulcher in the ancient ruins of San Juan Teotihuacan, and the making of a series of casts from the remaining pure bloods among the Aztec descendants in Xochimilco.

The Argentina, as well as the Peruvian and Mexican, collections have been transferred to the U. S. National Museum.

RESEARCHES UNDER HODGKINS FUND.

Flying organs of insects and birds.—Under the direction of Professor von Lendenfeld, of Prague University, aided by a grant from the Hodgkins Fund, there has been carried on for the past ten years investigations on the flying organs of various insects and birds. Some of the results of these studies have been published in the Smithsonian Miscellaneous Collections in papers by Dr. E. Mascha on "The structure of wing feathers," Dr. Leo Walter on "The clasping organs attaching the hind to the fore wings in hymenoptera," and Dr. Bruno Müller on "The air sacs of the pigeons."

There was received during the past year and prepared for press a fourth paper on "The flying apparatus of the blow-fly."

These investigations were fostered by the late Secretary Langley with the hope that they would yield information useful to engineers and others interested in the problem of flight. It was the opinion of the investigator that of all the forms of insects, and indeed of all flying animals, the Diptera, such as the blow-fly, furnish the most promising pattern for a flying machine and that a working model should be built according to this pattern and experimented with.

Mount Whitney Observatory.—The construction on Mount Whitney, California, of a small steel and stone house to serve as a shelter for observers and investigators during the prosecution of researches on atmospheric air and other cognate subjects was authorized October 30, 1908, by an allotment from the Hodgkins Fund.

This spot had been selected as an observation point by the late Secretary Langley as far back as 1881, and had been visited later by other scientific investigators, including Professor Campbell, of the Lick Observatory, and Director Abbot, of the Smithsonian Astrophysical Observatory, each of whom realized the unusual advantages offered by this mountain as a site for a meteorological and atmospheric observatory.

Before erecting the shelter it was necessary to build a trail to the top of the peak, 14,502 feet above sea level, in order to transport the building material, supplies, and instruments. Many dangers and hardships were undergone by the men who accomplished this work, but finally the trail was completed and the equipment packed up the mountain.[a]

The actual work of construction of the shelter was begun July 28, 1909, when the first pack train reached the summit, and was quite completed by August 27, 1909, when summer observations were begun by Director Abbot, of the Smithsonian Astrophysical Observ-

[a] A more detailed account of the work, "A shelter for observers on Mount Whitney," by C. G. Abbot, was published January 12, 1910, in the Smithsonian Miscellaneous Collections, vol. 52, pp. 499–506.

atory, and Director Campbell, of the Lick Observatory, who was engaged in a study of the spectrum of Mars.

The erection of the shelter has already proved a most beneficial undertaking, and it will undoubtedly serve for many years as such for observation parties not only of the Smithsonian Institution but of other institutions desiring to benefit by the conditions and advantages offered to scientists by this exceptional location. Applications for permission to use this shelter by scientific research parties should be made to the Secretary.

Relation of atmospheric air to tuberculosis.—In February, 1908, the Institution offered a prize of $1,500 for the best treatise on "The relation of atmospheric air to tuberculosis," to be awarded in connection with the International Congress on Tuberculosis held in Washington in September of that year, but owing to the great work of translating, reading, and classifying the 81 papers submitted, the committee on award has not, as yet, made a final report; although much progress is reported and the final announcement is excepted shortly.

Publications under Hodgkins Fund.—There was published during the year as a Hodgkins Fund publication a volume on "Mechanics of the Earth's Atmosphere," consisting of a series of 25 papers translated from the French and German by Professor Abbe, and forming a connected treatise on that subject.

Another volume issued at the cost of the Hodgkins Fund was an exhaustive bibliography of aeronautical literature compiled by Mr. Paul Brockett, and containing titles of 13,500 papers on aviation in all languages published previous to July 1, 1909.

THE SMITHSONIAN TABLE AT THE NAPLES ZOOLOGICAL STATION.

For over seventeen years the Institution has maintained at the Naples Zoological Station a table for the use of American biologists, and the lease has been renewed for a period of three years from January 1, 1910, at an annual rental of 2,500 francs.

The founder and director of the station, Dr. Anton Dohrn, always showed a most cordial spirit of helpfulness toward the Institution in arranging for its appointees, and it is with particular regret that I report his death, which occurred on September 29, 1909. At the request of the Institution, the Department of State designated the American consul at Naples to represent the Institution officially at the funeral.

Doctor Dohrn has been succeeded by his son, Dr. Reinhard Dohrn, who has expressed his earnest adherence to the policies adopted by his father, and assures the Institution of his hearty cooperation during his administration.

During the year the following American biologists were appointed to the Smithsonian Table:

Prof. H. D. Senior, of the College of Medicine of the Syracuse University, who continued his researches in the angioblast of the trunk in Teleosts through studies of the origin of the circulation in *Amphioxus*.

Dr. R. M. Strong, of the University of Chicago, whose work was confined to some general studies of chromatophores, which occur in two species of Cephalopods and in three species of Crustacea.

Dr. W. D. Hoyt, formerly of Johns Hopkins University, but now of Rutgers College, whose studies comprehended the periodicity in the fruiting and cultural experiments in alternations of generations of marine algæ.

Prof. Charles L. Edwards, of Trinity College, who continued his investigations in the variations in *Synapta inhoerens* and other holothurians.

Prof. Charles W. Greene, of the University of Missouri, who worked on the comparative physiology of fishes.

Applications for future occupancy of the Table have been received during the year from Dr. S. R. Williams, of the Miami University, and from Dr. Sergius Morgulis, of Harvard University.

The advisory committee on the Smithsonian Table has, as always, rendered invaluable aid in the examination of the credentials of applicants, and it is desired to here record the Institution's appreciation of their assistance.

During the year an important change in the personnel of the committee took place. Dr. John S. Billings, who served for many years as its chairman, tendered his resignation, and it is much regretted that a relationship so helpful and agreeable has been thus terminated. The Institution is fortunate, however, in securing the cooperation of Dr. Carl H. Eigenmann, professor of zoology at the Indiana University and director of the biological station maintained in connection with that establishment. The present organization of the committee is as follows:

Dr. Theodore Gill, of the Smithsonian Institution, chairman; Dr. C. Wardell Stiles, of the Bureau of Public Health and Marine-Hospital Service, secretary; Dr. E. B. Wilson, of the Columbia University, New York; Dr. Carl H. Eigenmann, of the Indiana University.

PUBLICATIONS.

The principal medium for carrying out one of the fundamental functions of the Institution, "the diffusion of knowledge," is through its publications. The Smithsonian Contributions to Knowledge, the Smithsonian Miscellaneous Collections, and the Smithsonian annual

reports now comprise a library of about 150 quarto and octavo volumes covering practically every branch of scientific knowledge, and if to these be added the publications issued under its direction by the National Museum, the Bureau of Ethnology, and the Astrophysical Observatory, the scientific literature produced through the Institution aggregates about 350 volumes, made up of several thousand memoirs and papers.

The works issued at the expense of the Institution proper are necessarily in limited editions, but they are so distributed to the principal libraries throughout the world as to be available for general reference by all who need them. The annual reports, the general appendix of which is made up of selected papers reviewing progress in scientific work in all its branches, is a public document, and through the liberality of Congress is published in larger numbers than the other Smithsonian series, although the editions of this more popular work are each exhausted soon after publication.

In the series of Contributions, reserved for original additions to knowledge, no memoir was issued during the year.

Langley memoir on mechanical flight.—Two memoirs by the late Secretary Langley, entitled "Experiments in Aerodynamics" and "The Internal Work of the Wind," were printed in 1891 and 1893, respectively, as parts of volume 27 of the Smithsonian Contributions to Knowledge, and several editions of each have since been published. A third memoir, dealing with later experiments to December 8, 1903, to be entitled "Langley Memoir on Mechanical Flight," was to complete that volume. This work was in preparation at the time of Mr. Langley's death in 1906, and the manuscript of the first part covering his experiments down to November, 1896, had been written by him and partially revised for press. The further editorial revision of that part and the completion of part 2 to bring the work down to the close of the experiments on December 8, 1903, was placed in the hands of Mr. Charles M. Manly, who had for several years been Mr. Langley's chief assistant in his experiments. The completed manuscript is now nearly ready for the press and it will probably be published within a few months.

It is hoped that later it may be practicable to have tabulated and published the extensive technical data of observations of the working of the model aerodromes and various types of engines, propellers, planes, and other apparatus with the use of the pendulum and whirling-arm.

It is of interest here to note that on August 6, 1907, a French aviator made a flight of nearly 500 feet with a machine of the Langley type.[a]

[a] Recent Progress in Aviation. By Octave Chanute. In Journal Western Society of Engineers, vol. 15, No. 2, April, 1910. See also various French and Italian aeronautical periodicals giving some details of these experiments.

Smithsonian Miscellaneous Collections.—Thirty papers were added to the Miscellaneous Collections, including a number of biological and anthropological articles, and four volumes of considerable size on The Mechanics of the Earth's Atmosphere, Landmarks of Botanical History, Bibliography of Aeronautics, and Recalculation of Atomic Weights, all of which are enumerated in detail in the appendix to this report.

Among the papers published just at the close of the year was one by Dr. F. W. Clarke on "Chemical denudation" and one by Dr. George F. Becker on the "Age of the earth."

The Smithsonian Physical Tables have been revised and extended to bring the work within the range of recent advances in the science of physics, and the new edition has been put to press. The several series of Smithsonian meteorological, geographical, physical, and mathematical tables continue to be in demand by students, and new editions are required at comparatively frequent intervals.

As mentioned on another page, three papers have been added to the series descriptive of my researches in Cambrian Geology and Paleontology.

Harriman Alaska Expedition.—Arrangements are being made by which the publication of the series of volumes on the results of the Harriman scientific expedition to Alaska in 1899 will be transferred to the Smithsonian Institution and the work will hereafter be known as the Harriman Alaska series of the Smithsonian Institution. The remainder of the edition of the 11 volumes privately printed, as well as volumes in preparation, will bear special Smithsonian title pages, and all will be distributed under the auspices of the Institution.

National Museum publications.—The National Museum publications during the year included the annual report on its operations, about 50 papers, chiefly biological, in the proceedings, 8 bulletins, and 7 botanical papers in the series of Contributions from the National Herbarium. The most elaborate of these works is Bulletin No. 70, devoted to the National Gallery of Art, by Assistant Secretary Richard Rathbun. This book reviews the history of the Art Gallery and gives a catalogue of the collections with illustrations of some of the most important paintings.

Bureau of Ethnology.—The Bureau of American Ethnology issued five bulletins during the year, including works on the unwritten literature of Hawaii, by Doctor Emerson, and "Antiquities of the Mesa Verde National Park," by Doctor Fewkes.

Society publications.—The annual reports of the American Historical Association and of the National Society of the Daughters of the American Revolution were received from those organizations and communicated to Congress in accordance with their national charters.

Allotments for printing.—The allotments to the Institution and its branches, under the head of public printing and binding, during the past fiscal year, aggregating $72,700, were, as far as practicable, expended prior to June 30. The allotments for the year ending June 30, 1911, are as follows:

For the Smithsonian Institution for printing and binding annual reports of the Board of Regents, with general appendixes	$10,000
For the annual reports of the National Museum, with general appendixes, and for printing labels and blanks, and for the bulletins and proceedings of the National Museum, the editions of which shall not exceed 4,000 copies, and binding, in half turkey or material not more expensive, scientific books and pamplets presented to or acquired by the National Museum library	34,000
For the annual reports and bulletins of the Bureau of American Ethnology, and for miscellaneous printing and binding for the bureau, including the binding in half turkey, or in material not more expensive, scientific books and pamphlets acquired by the bureau library	21,000
For miscellaneous printing and binding:	
International Exchanges	200
International Catalogue of Scientific Literature	100
National Zoological Park	200
Astrophysical Observatory	200
For the annual report of the American Historical Association	7,000
Total	72,700

ADVISORY COMMITTEE ON PRINTING AND PUBLICATION.

The committee on printing and publication has continued to examine manuscripts proposed for publication by the branches of the Institution and has considered various questions concerning public printing and binding. Twenty-five meetings of the committee were held during the year and 106 manuscripts were passed upon. The personnel of the committee is as follows: Dr. Frederick W. True, head curator of biology, United States National Museum, chairman; Mr. C. G. Abbot, director of the Astrophysical Observatory; Mr. W. I. Adams, of the International Exchanges; Dr. Frank Baker, superintendent of the National Zoological Park; Mr. A. Howard Clark, editor of the Smithsonian Institution; Mr. F. W. Hodge, ethnologist, the Bureau of American Ethnology; Dr. George P. Merrill, head curator of geology, United States National Museum; and Dr. Leonhard Stejneger, curator of reptiles and batrachians, United States National Museum.

THE LIBRARY.

The Smithsonian Library as at present organized includes (1) the Smithsonian deposit in the Library of Congress, (2) the Smithsonian office library, (3) the library of the National Museum, (4) the library of the Bureau of American Ethnology, (5) the library of the Astro-

physical Observatory, and (6) the library of the National Zoological Park. The Bureau of Ethnology Library, together with the business offices of the Bureau, was during the past year transferred to the Smithsonian building, where it is more accessible than heretofore for reference.

The total additions to these several libraries during the year aggregated more than 23,000 volumes, pamphlets, and serial publications.

The library of the National Museum, which is subdivided into 31 sectional libraries for the convenience of the several departments and divisions, now numbers 38,300 volumes, 61,858 unbound papers, and 110 manuscripts, and the Bureau of Ethnology library contains 16,050 volumes, 11,600 pamphlets, several thousand periodicals, and a large collection of manuscripts.

The Smithsonian deposit in the Library of Congress was increased by the addition of 2,653 volumes, 2,879 parts of volumes, 1,396 pamphlets, and 623 charts, the total accession entries now having reached the half-million mark. This library is becoming more and more valuable as the sets of transactions and memoirs of the learned institutions of the world and of scientific periodicals are each year made more complete.

There was published during the year a bibliography of aeronautics, prepared by the assistant librarian. This work contains references to about 13,500 books or papers on that subject, most of which are available for reference in Washington, the collection of aeronautical literature in the Smithsonian office library having been greatly increased in recent years.

THE LANGLEY MEDAL.

In memory of the late Secretary Samuel Pierpont Langley and his contributions to the science of aerodromics, the Board of Regents on December 15, 1908, established the Langley medal, "to be awarded for specially meritorious investigations in connection with the science of aerodromics and its application to aviation."

As stated in my last report, the first award of the medal was voted by the Board of Regents to Wilbur and Orville Wright, "for advancing the science of aerodromics in its application to aviation by their successful investigations and by their successful demonstrations of the practicability of mechanical flight by man."

The brothers Wright were immediately communicated with in France and accepted an invitation to be present at the Board meeting of February 10, 1910, to receive the medals in person. On the date mentioned they were introduced to the Board and the formal presentation was made. Dr. Alexander Graham Bell reviewed the progress made in the science of aviation by the investigations and experiments

of Professor Langley, culminating on May 6, 1896, in the demonstration that a model aerodrome heavier than air could support itself and fly under its own power. Professor Langley thus became "the great pioneer of aerial flight."[a]

Senator Lodge made the formal presentation speech, in which he said:

It is peculiarly the characteristic of Americans to be pioneers; pioneers across the great continent on which we live, pioneers by sea, and now pioneers by air; and to Wilbur and Orville Wright, pioneers of what Doctor Langley called "the great universal highway overhead," who by their achievements have added honor to the American name and nation, we now present the first Langley medal that the institution has conferred.

After receiving the medals from the hands of the Chancellor the recipients expressed their great pleasure in being considered worthy of such distinction. Mr. Wilbur Wright called attention to the valuable scientific researches by Professor Langley in matters relating to the physical properties of the air and to the great importance of extending these researches, particularly to determine the coefficient of air pressure; that is, the pressure of wind at a certain speed on a plane of a certain size.

As an indication of their early confidence in the successful solution of the problem of aerial navigation, the Wright brothers said:

The knowledge that the head of the most prominent scientific institution of America believed in the possibility of human flight was one of the influences that led us to undertake the preliminary investigations that preceded our active work. He recommended to us the books which enabled us to form sane ideas at the outset. It was a helping hand at a critical time, and we shall always be grateful.

LANGLEY MEMORIAL TABLET.

In accordance with a resolution adopted by the Board of Regents on December 15, 1908, designs have been prepared, and are under consideration by a special committee, for "the erection in the Institution building of a tablet to the memory of Secretary Langley, setting forth his services in connection with the subject of aerial navigation." The committee's recommendations are that the tablet be modeled in bronze in low relief along the lines of the work of St. Gaudens, to contain a bas-relief of the bust of Mr. Langley, and that in the background there be represented a model of the Langley aerodrome in full flight, with the date of its first flight. The tablet is also to bear the lettering "Samuel Pierpont Langley, 1834–1906, Secretary of the Smithsonian Institution, 1887–1906," and to bear also the text

[a] The full addresses by Doctor Bell and others on this occasion will be printed in the report of the Board to Congress.

of what is known as Langley's Law as to relation of speed to power in aerial motion, as follows:

> These new experiments (and theory also when viewed in their light) show that if in such aerial motion, there be given a plane of fixed size and weight, inclined at such an angle, and moved forward at such a speed, that it shall be sustained in horizontal flight, then the more rapid the motion is, the less will be the power required to support and advance it.

COMMISSION ON ZOOLOGICAL NOMENCLATURE.

An International Commission on Zoological Nomenclature, consisting of five members, was appointed in 1895 by the Third International Zoological Congress, held at Leyden, Holland, for the purpose of studying the various codes of nomenclature and to report upon the same at a later congress. At the congress at Cambridge, England, in 1898, the commission was made permanent and increased to fifteen members. At the Berne Congress, in 1904, the commissioners were divided into three classes of five, each class to serve for nine years.

Committees on nomenclature, to cooperate with the International Commission, have been organized in the United States by the Entomological Society of America, the Association of Economic Entomologists, the American Ornithologists' Union, and the Society of American Zoologists.

A code of nomenclature was adopted at the Berlin congress in 1901 and was amended at the Boston congress in 1907. Prior to the Boston congress a desire had developed among zoologists that the commission should serve as a court of interpretation of the code, and in accordance therewith the commission presented to the Boston congress five opinions, which were ratified by the congress.

Since the Boston meeting a number of questions on nomenclature have been submitted to the commission for opinion. Owing to the amount of time consumed in communicating with the fifteen commissioners it was impossible to act promptly upon these cases, but in December, 1909, the Smithsonian Institution gave a grant to provide for the clerical work for a period of three years, and since that time it has been possible to render the opinions more promptly.

The commission has no legislative power. Its powers are restricted to studying questions of nomenclature, to reporting upon such questions to the international congress, and to rendering opinions upon cases submitted to it.

The Smithsonian Institution has also undertaken the publication of the opinions of the commission for a limited period and their distribution to important libraries and to zoological specialists throughout the world. The first issue of these opinions was in press at the close of the fiscal year and included opinions 1 to 25, covering several

important questions, making a pamphlet of 61 pages. In connection with the summary of each opinion there is given a statement of the case and the discussion thereon by the members of the commission.

The commission has issued the following rules to be followed in submitting cases for opinion:

(1) The commission does not undertake to act as a bibliographic or nomenclatural bureau, but rather as an adviser in connection with the more difficult and disputed cases of nomenclature.

(2) All cases submitted should be accompanied by (*a*) a concise statement of the point at issue, (*b*) the full arguments on both sides in case a disputed point is involved, and (*c*) complete and exact bibliographic references to every book or article bearing on the point at issue.

The more complete the data when the case is submitted, the more promptly can it be acted upon.

(3) Of necessity, cases submitted with incomplete bibliographic references can not be studied, and must be returned by the commission to the sender.

(4) Cases upon which an opinion is desired may be sent to any member of the commission, but—

(5) In order that the work of the commission may be confined as much as possible to the more difficult and the disputed cases it is urged that zoologists study the code and settle for themselves as many cases as possible.

INTERNATIONAL CONGRESSES AND CELEBRATIONS.

Congress of Americanists.—The Institution was represented at the Seventeenth International Congress of Americanists held at Buenos Aires, May 16 to 21, 1910, by three delegates, Dr. Aleš Hrdlička, of the United States National Museum; Mr. Bailey Willis, of the United States Geological Survey; and Rev. Charles Warren Currier, of the Catholic University of America. Doctor Hrdlička reports that the meeting was very well attended, particularly by delegates from the various republics of South America. There were read nearly fifty papers, many of them of considerable interest, and related chiefly to the natives of South America. Mr. Bailey Willis presented a communication on "Changes in the geological environment during the Quaternary period," and Doctor Hrdlička gave a résumé of the present knowledge on "Artificial deformation of the human skull, with special reference to America."

The Institution also appointed Dr. Aleš Hrdlička its representative at the second meeting of the above congress to be held in the City of Mexico, September 7 to 14, 1910.

Upon the suggestion of the Smithsonian Institution, the Department of State designated Doctor Hrdlička, Mr. Willis, and Doctor Currier as representatives of the United States at the above congress at Buenos Aires.

Geological Congress.—Dr. George F. Becker, of the United States Geological Survey, was designated as the representative of the Smithsonian Institution at the Eleventh International Geological Con-

gress at Stockholm, Sweden, in August, 1910. A paper expressing my view on "The abrupt appearance of the Cambrian fauna" was prepared to be read at this congress.

International American Scientific Congress.—Mr. Bailey Willis, of the United States Geological Survey, was appointed a delegate in behalf of the Smithsonian Institution to the International American Scientific Congress to be held at Buenos Aires, July 10 to 25, 1910, on the occasion of the Argentina centennial.

Congress on Ornithology.—Mr. William Dutcher, president of the National Association of Audubon Societies, was designated as the representative on the part of the Smithsonian Institution and United States National Museum at the Fifth International Congress on Ornithology held at Berlin from May 30 to June 4, 1910, and upon the nomination of the Institution Mr. Dutcher was also accredited by the Department of State as a delegate on the part of the United States to that congress.

Zoological congress.—The following gentlemen were designated as delegates to represent the Smithsonian Institution and United States National Museum at the Eighth International Zoological Congress to be held at Graz, Austria, from August 15 to 20, 1910, and the Department of State designated them as delegates on the part of the United States: Dr. Charles Wardell Stiles, of the Public Health and Marine-Hospital Service, and custodian of Helminthological Collections in the National Museum; Dr. Henry Haviland Field, an American naturalist and director of the Concilium Bibliographicum; Dr. William E. Kellicott, professor of biology in Goucher College, Baltimore; and Mr. Austin H. Clark, Assistant Curator of the Division of Marine Invertebrates, United States National Museum.

Congress of Botany.—Dr. Frederick V. Coville, of the United States National Museum, and Dr. Joseph C. Arthur, of Purdue University, were designated as representatives of the Smithsonian Institution to the Third International Congress of Botany held at Brussels May 14 to 22, 1910.

Aeronautical Exposition.—The Institution was invited to exhibit some models of the Langley flying machines at an aeronautical exposition at Frankfort-on-the-Main July 10 to October 10, 1909, but it was impracticable to do more than send a series of photographs of the model machines in flight on May 6, 1896, and August 8, 1903, and some views of the full-size aerodrome on the launching ways near Widewater, Virginia.

Inauguration of President Lowell.—The President and Fellows of Harvard College invited the Smithsonian Institution to be represented by a delegate at the inauguration on October 6 and 7, 1909, of Abbott Lawrence Lowell, LL. D., as the twenty-fourth president of Harvard University. It was my pleasure to attend the ceremonies

at Cambridge as such delegate and to present in engrossed form the greetings and congratulations of the Institution.

University of Oviedo.—The Institution received from the University of Oviedo, Spain, a copy of an address and a medal commemorative of the third centenary of that university.

Russian Entomological Society.—The Institution found it to be impracticable to send a delegate to the fiftieth anniversary of the founding of the Entomological Society of Russia at St. Petersburg March 11, 1910, but forwarded its formal congratulations and good wishes.

Conference of librarians.—Mr. Paul Brockett, assistant librarian of the Institution, was authorized to accept the invitation of the secretary of the Institut International de Bibliographie to take part in and become a member of the Congrès International de Bibliographie et de Documentation to be held at Brussels, Belgium, August 25 to 27, 1910, and he was also designated to represent the Institution in the Congrès International des Archivistes et des Bibliothécaires at the same place on August 29 to 31, 1910.

MISCELLANEOUS.

George Washington Memorial Building.—At the February meeting of the Board of Regents I spoke of the movement of the George Washington Memorial Association to erect in Washington a memorial building, which would be used as a center for the scientific, literary, patriotic, and educational associations of the country. It is believed that such a building would afford a much-needed relief to the present crowded condition of the Smithsonian building, resulting in part by the accommodations offered to the National Academy of Sciences, the American Association for the Advancement of Science, the American Historical Association, and others.

The proposed building would be erected by popular subscription.

Preservation of American antiquities.—Under the requirements of law (act of June 8, 1906), the Institution has continued its consideration of applications for permits to make archeological excavations or collections on the public domain of the United States, including requests for researches in the Aleutian Islands, Arizona, New Mexico, Utah, and California.

Gifts.—Among the gifts to the Institution during the year special mention may be made of the C. Hart Merriam collection of 5,800 specimens of skins of mammals and about 6,000 skulls, including 100 full skulls of mammals and 235 skulls of seals presented by Mrs. Edward H. Harriman.

Additional gifts by Mr. Freer and others are referred to in connection with the National Gallery of Art.

NATIONAL MUSEUM.

A summary of the operations of the National Museum is given as usual in the appendix to this report and full details are set forth by the Assistant Secretary in a separate volume, and need not therefore be fully treated here.

New building.—At the close of the year the exterior of the new Museum building had been practically completed. Several months' work, however, remained to be done to finish the south pavilion or rotunda. Provision has been made for the improvement of the grounds immediately about the building, including granolithic roads and walks, grading, and readjustment of roadways.

The transfer of collections, laboratories, and workshops to the new building has progressed as rapidly as practicable considering that the floor area to be provided with furniture and other new equipment is about 10 acres.

The collections of the National Gallery of Art, as mentioned below, were transferred to the middle hall of the new building and opened to the public in March, and in connection therewith some of the more interesting ethnological groups and historical exhibits were installed in the surrounding hall and adjacent ranges. It was not practicable to open any other portions of the building to the public, although more than half of the natural history collections, both reserve and exhibition, had been transferred to their new quarters.

Art textiles.—The removal of the paintings from the old building has afforded more ample space for the display of the art textiles and fabrics, consisting of laces, embroideries, tapestries, brocades, and velvets; also fans, enamels, porcelains, jewelry, etc. As mentioned in my last report, these objects were brought together at the suggestion of Mrs. James W. Pinchot, who has given personal attention to their collection and arrangement.

Accessions.—The additions to the Museum during the year aggregated 970,698 specimens, as compared with 250,000 in the year preceding. The most noteworthy collection of the year was several thousand specimens of mammals, birds, reptiles, batrachians, and other animals, besides several thousand plants, received from the Smithsonian African Expedition under the direction of Col. Theodore Roosevelt, more fully referred to on another page. Other important accessions in the several departments of the Museum are enumerated by the Assistant Secretary in the appendix to the present report. About 800,000 entomological specimens, received from the Department of Agriculture, were varieties of beetles and other insects injurious to forest trees, which had been accumulated during investigations by the Bureau of Entomology.

Distribution of specimens.—The Museum has taken a special interest for many years, to as great an extent as appropriations would permit, in the preparation and distribution to educational establishments throughout the country of series of duplicate specimens pertaining chiefly to natural history. During the past year about 6,000 such specimens were distributed.

National Herbarium.—The removal of the archeological collections from the large upper hall of the Smithsonian building has afforded an opportunity for furnishing adequate quarters for the National Herbarium, which for many years has occupied crowded and unsuitable space in the galleries of the National Museum.

Growth of Museum.—The national collections have so increased in size and value as to make them comparable with the similar collections of the greater European countries, and with the occupation of the new building they may now be housed and arranged in an appropriate and convenient manner. This expansion, however, involves a much greater annual expenditure than heretofore, the larger portion of which is called for in connection with the exhibition halls, maintained for the benefit of the public. The extent of these halls has been about trebled, thus offering an opportunity for the preparation and mounting for display of many additional specimens, a work that will be pushed as rapidly as available funds will permit in order that the operations of the Museum may be commensurate with their importance to the public interests and to science.

THE NATIONAL GALLERY OF ART.

As stated in my last report the collections of the National Gallery of Art had then so increased that they could no longer all be accommodated in the old National Museum building, and Congress having failed to authorize the adaptation of the large hall of the Smithsonian building for their proper exhibition, it had become necessary to make preparations for their display temporarily in one of the halls in the new Museum building. The space selected was the central part of the middle hall, 50 feet wide and about 130 feet long, with a central skylight. Screen walls were constructed, divided into seven rooms. An informal opening of the gallery was held on March 17, 1910, which was largely attended.

The collections were increased during the year by the further gift from Mr. William T. Evans of 32 paintings and 1 fire etching on wood, and by a considerable number of loans from various individuals. It became necessary at the close of the year to make preparation for extending the limits of the gallery so as to include the entire space below the skylight in the middle hall.

The history of the gallery and a catalogue of the collections was published during the year in a volume of 140 pages as Bulletin No.

70 of the National Museum. This was prepared by the Assistant Secretary, Dr. Richard Rathbun, who has been most arduous in his efforts to promote the gallery's growth.

On the occasion of the first annual convention of the American Federation of Art, held in Washington May 17–19, 1910, I had the pleasure of presenting a brief account of the National Gallery, and a private view of the collections was extended to the members of the convention and friends on the afternoon of May 17.

The subject is of such importance that it seems proper here to recall in a general way the origin of the gallery and its present condition and needs.

In 1840, while the question of what should be done with the Smithson bequest was under consideration in Congress, a few gentlemen organized the National Institute, which was in 1842 incorporated by Congress for a term of twenty years, at the expiration of which its collections were to be transferred to the Government. This institute collected a few works of art, which were subsequently transferred to the Smithsonian Institution.

The act of 1846 creating the Smithsonian Institution provides that all objects of art belonging to the United States which may be in the city of Washington shall be delivered to such persons as may be authorized by the Board of Regents to receive them and that they shall be arranged and classified in the building erected for the Institution.

In 1849, under the authority of the Regents, Secretary Henry purchased the Marsh collection of engravings and works of art.

In 1858 the collections in the Patent Office Museum were turned over to the Smithsonian Institution, and in 1862 the collections of the National Institute were transferred, on the expiration of its charter. These collections included a few paintings of merit and sundry art objects.

In 1879 the Catlin collection of Indian paintings was presented to the Institution by Mrs. Joseph Harrison, of Philadelphia.

A few additions were made from time to time up to 1906, but they were relatively of little importance, and, with the collections already in hand, were scattered about in the Smithsonian building and the National Museum building erected in 1879.

In 1903, when the will of Harriet Lane Johnston was presented for probate, it was found that she had bequeathed her entire collection of paintings and art objects to the Corcoran Gallery of Art, under certain specific conditions and subject to the provision that in the event of a national art gallery being established in the city of Washington they should be transferred to the said National Art Gallery and become the absolute property of that gallery. The Corcoran Gallery declined the bequest under the conditions, and the

executors of the Johnston estate asked the courts for a construction of the clause in the testament providing that the collection be given to a national art gallery. This suit was filed on February 7, 1905, in the Supreme Court of the District of Columbia, and by an order of the court dated July 18, 1906, the collections were delivered to the Smithsonian Institution on August 3, 1906, the court deciding that there had been established by the United States of America in the city of Washington a national art gallery within the meaning of Harriet Lane Johnston's will.

In 1904, Mr. Charles L. Freer, of Detroit, offered his art collection to the Smithsonian Institution, under certain specified conditions, and also offered to furnish the means for erecting, after his death, a suitable building to receive the collection. This collection was formally accepted by the Regents of the Smithsonian Institution in 1906. It includes more than 2,250 objects, including paintings in oil, water color, and pastel, drawings and sketches, etchings and dry points, lithographs, oriental pottery, and other objects.

The action of Harriet Lane Johnston and Mr. Charles L. Freer called the attention of all interested in art, to the fact that there was a national gallery, and that under the care of the Smithsonian Institution it was making conservative and satisfactory progress.

In March, 1907, Mr. William T. Evans, of Montclair, New Jersey, announced to the Institution his desire to contribute to the National Gallery a number of paintings by contemporary American artists of established reputation. In transmitting the first installment of paintings, he wrote:

> I have every reason to believe that you will like my selections, but should any of the examples not hold well, others can be substituted, as it is my desire to have every artist represented at his best. As already intimated, I intend that the present gift may not be considered as final. Additions may be made from time to time as opportunities occur to secure exceptional works.

Fifty paintings were enumerated in the list which accompanied this letter. Up to June 30, 1910, Mr. Evans had presented 114 selected paintings, representing 80 artists. These, with the paintings already in the possession of the Institution, bring the exhibit now installed in the large hall of the new Museum building to more than 160.

The world-wide interest in the National Gallery has been increasing rapidly during the past three years, and we believe, without question, that the collections will grow quite as rapidly as facilities can be provided for their proper installation and exhibition. The collection, including the Freer collection, is particularly strong in pictures by American artists, and it is well that it should be so, in order that it may have a strong national tone. The Harriet Lane Johnston collection has given the Gallery fine examples of several of the mas-

ters of European art, and we hope that this feature will be strengthened from time to time as the years go on.

The Charles L. Freer collection contains many beautiful paintings by Tryon, Dewing, Thayer, and the unexcelled series of Whistler paintings, pastels, drawings, and sketches; also the beautiful Peacock room. In oriental art the collection representing Japanese and Chinese paintings from the tenth to the nineteenth century can not be duplicated in any single gallery in the world, and the bronzes and pottery are beautiful, and to a large extent unique and of great historical and artistic value.

The question of a suitable building for the great Freer collection has been happily settled by Mr. Freer, but we still have to consider the problem of properly housing and exhibiting the collections now in the new natural history museum building, as their present installation is of a temporary character.

I have hope that some of our strong men or women who have the means will see the great opportunity that is now offered to present to the nation a suitable building that will be an epoch-making incident in the development of national art and a monument to the culture and patriotism of the one so wise as to take advantage of the opportunity.

The American people, as represented by Congress, have just provided a large and beautiful building for the collections of natural history, and in due time it is expected that sufficient interest will be taken in the art collections of the Government to provide a suitable home for them. This, however, is not to be anticipated in the immediate future, although the collections now in hand and what will be inevitably received if accommodations are provided for them will make a most creditable showing.

I have been frequently asked what effect the development of a national art gallery would have upon the Corcoran Gallery of Art at Washington, and in response I have quoted the effect of the establishment of the Leland Stanford University, in California, upon the State University of California. Prior to the establishment of the Leland Stanford University the State University was a relatively small affair. Its friends, realizing that they must approach the standard set by the proposed new university, at once cast about for strong leaders and strong men for their faculty, and the result in a few years was that California had one of the great research universities of the country in the Leland Stanford and one of the great state universities, with thousands of students. The Corcoran Gallery, with its splendid history, fine building, and beautiful collection of paintings and statuary, has an international fame, and will grow stronger and more rapidly under the stimulus of a greater art interest, caused by the development of the national gallery. One will

supplement the other, and anyone visiting Washington at all interested in art will be obliged to visit both.

The most sincere and hearty cooperation has existed in the past between the two institutions, and it will continue in the future, the only rivalry being that each will endeavor to hold to a higher standard and uplift the art ideals in America.

In order to insure the maintenance of the gallery at a proper standard there has been organized a permanent honorary committee of men competent to pass judgment on the quality of such works of art as might be presented for acceptance by the gallery and who are also so identified with the art interests of the country as to assure to the public and especially to the lovers and patrons of art the wholly worthy purpose of this movement on behalf of the nation. This advisory committee is constituted as follows:

Mr. Francis D. Millett, president; Mr. Frederick Crowninshield, representing the Fine Arts Federation, of which he is president; Mr. Edwin H. Blashfield, representing the National Academy of Design; Mr. Herbert Adams, representing the National Sculpture Society, of which he is president; and Mr. William H. Holmes, of the Smithsonian Institution, secretary of the committee.

BUREAU OF AMERICAN ETHNOLOGY.

The Bureau of American Ethnology has in the past accomplished much in its study of the habits, customs, and beliefs of the American aborigines. The results of these researches have in considerable measure been permanently recorded in annual reports and bulletins that contain a mass of valuable information on aboriginal arts and industries, forms of government, religious and social customs, languages, and mental and physical characteristics. Although a large body of material still awaits final study and arrangement and much remains to be done both in field and office work, yet the investigations of the Bureau have reached such a stage as to render it possible to summarize some of the results in the form of handbooks designed especially for the use of schools and nonprofessional students. The demand for the handbooks already issued or in preparation has been very large.

The Indians form one of the great races of mankind, and the world looks to the Government for all possible knowledge that is still available concerning this race before it shall have vanished by assimilation in the great body of the American people.

The Bureau has likewise done much in the exploration and preservation of antiquities, especially the prehistoric ruins in the southern Rocky Mountain region, and will continue work in this direction and press it more rapidly while there is still opportunity to save them

from vandalism and to preserve them for the benefit of future generations.

There is present need of ethnological researches among the tribal remnants of the Mississippi basin, since the opportunities for making and preserving a permanent record of the aborigines which played such an important part in the early history of the Middle West are rapidly passing.

Ethnological researches should also be made in the Hawaiian Islands and in Samoa. Little reliable information regarding the ethnology of these insular possessions has been recorded, and it is hoped that Congress may soon provide the means for initiating among their natives researches of the same general character as those now being conducted among the American Indian tribes.

The various lines of ethnological studies carried on by the Bureau during the past year are presented in detail in the appendix to the present report.

The removal of some divisions of the National Museum to the new Museum building afforded an opportunity for the transfer in December last of the offices and library of the Bureau of American Ethnology from rented quarters to the Smithsonian building. It was found desirable at the same time to reorganize the office force, Mr. Holmes, Chief of the Bureau for several years, having resumed the office of head curator of the Department of Anthropology in the National Museum.

With a view to economy in the transaction of the routine business of the Bureau, much of the clerical and all the laboring work was concentrated by placing the routine correspondence and files, the accounts, the shipment of publications, and the care of supplies and other property in immediate charge of the office of the Smithsonian Institution. It was thus found possible to render a larger proportion of the annual appropriation available for research work.

INTERNATIONAL EXCHANGES.

Several additional governments have entered into the immediate exchange of their parliamentary records during the past year, 26 countries now taking part in this exchange with the United States. A list of the countries to which the daily issue of the Congressional Record is sent will be found in the appended report on the exchanges. The Institution is still in correspondence with other governments regarding this immediate exchange, and from time to time additions will no doubt be made to the list of those countries participating. It may be stated, in this connection, that the exchange here alluded to is separate and distinct from the exchange of official documents which has existed between the United States and other countries for a number of years.

While the number of packages handled during the past year was 7,250 less than during the preceding twelve months, there was a gain in weight of 8,515 pounds. The number of packages passing through the service was 221,625, and the total weight 484,684 pounds.

The total available resources for carrying on the system of exchanges during 1910 amounted to $36,646.74—$32,200 of which were appropriated by the Congress and $4,446.74 were derived from exchange repayments to the Institution.

His Imperial Japanese Majesty's residency-general at Seoul having consented to act as the exchange intermediary between Korea and the United States, the interrupted exchange relations with that country have been resumed.

Under the exchange arrangements entered into in 1898, through the Imperial Academy of Sciences, in Vienna, with the Statistical Central Commission, it has been necessary for the Smithsonian Institution to bear all the expenses for freight on consignments both to and from Vienna. The government of Austria has now signified its willingness to assume its share of the cost of conducting the exchanges between the two countries, and in the future the Institution will, therefore, be relieved of this extra burden upon its resources. In bringing this matter to the attention of the Austrian Government, the Institution has had the assistance of the presidents of the Imperial Academy of Sciences and of the Statistical Central Commission, to both of whom thanks are due for their kind cooperation.

During the past year the Institution discontinued sending exchange packages to correspondents by registered mail. This step was taken with a view to reducing the work in the exchange office and also to relieving the Post-Office Department of the extra expense involved in handling the large amount of registered matter sent out by the exchanges.

There were 975 more correspondents on the records of the exchange office than at the close of last year, the total now being 63,605.

The circular containing the exchange rules has been revised during the year and a new edition printed. For the information of those who may wish to make use of the facilities of the service, the circular is given in full in the report on the exchanges.

German bureau of exchanges.—As has been mentioned in previous reports, the German Government has never undertaken the distribution of exchanges between Germany and the United States, and, in order to conduct the very large interchange of publications between the two countries, it has been necessary for the Smithsonian Institution to maintain a paid agency in Leipzig. During the year 1907, Germany was again approached, through the Department of State, on the subject of the establishment of a governmental bureau of exchanges in that country. It is gratifying to note here that the repre-

sentations of the department through the American ambassador at Berlin, have been given favorable consideration on the part of the German authorities, in connection with the establishment, under the direction of that Government, of the America Institute in Berlin—an institution for the fostering of cultural relations between Germany and the United States. While the Smithsonian Institution has not thus far received definite information of the actual establishment of this institute, it is learned through Dr. Hugo Münsterberg—Harvard exchange professor to the University of Berlin, who is to be the first director of this America institute, and who has taken a very active interest in the whole matter—that it is intended to have the institute assume, as one of is functions, the interchange of publications between Germany and the United States.

NATIONAL ZOOLOGICAL PARK.

The National Zoological Park was established in 1890 "for the advancement of science and the instruction and recreation of the people." The area covered by the park is 167 acres along the Rock Creek Valley, about 2 miles north of the center of Washington, in a region well adapted by nature for the purpose for which it is used. During the past twenty years improvements have gradually been made as appropriations have permitted by the laying out of driveways and walks and the construction of bridges to render access easy for visitors through connections with the city thoroughfares and with the roadways of Rock Creek Park to the north of the Zoological Park. From year to year likewise the comfort and care of the collections have been improved by the laying out of ponds and yards and the construction of bird cages, bear dens, and buildings suited to the habits of the various animals. Among the improvements of the past year I may mention that six new large cages were built for the lions and other large cats; the antelope house was enlarged by an extension 50 by 50 feet, furnishing 10 additional stalls with commodious yards, and a new entrance to the building; and a suitable pool 47 by 96 feet was made for the sea lions and seals.

There remains, however, much to be done to provide adequate accommodations for the collections that are gradually increasing in number and in value, as well as improved facilities for the great and increasing number of visitors to the park.

To a large extent the animals still have to be kept in temporary quarters, which are insufficient and unsuitable, and are costly to maintain because of the repairs that are constantly required. This is especially true of the temporary building used for birds. The park has a fine series of birds, some of them of great rarity and interest, and they would make a most valuable exhibit if properly housed.

Only a part of the collection can now be shown for lack of room, and it is practically impossible to maintain the birds in a healthy condition when kept in such unsuitable quarters.

The collections in the park were enriched during the year by the addition of a number of East African animals, including five lions, two cheetahs, a leopard, a Grant's gazelle, a wart hog, and several smaller mammals and birds, which were the gift of Mr. W. N. McMillan, of Nairobi; also a pair each of eland and Coke's hartebeest, a Grant's zebra, a water buck, and a Lophiomys, which were secured in the same region. These animals were of such interest and value as to render it desirable to send the assistant superintendent of the park to Africa to arrange for their safe transfer to Washington.

ASTROPHYSICAL OBSERVATORY.

The work of the Astrophysical Observatory during the year has brought two important results:

(1) The first result is the establishment of an absolute scale of pyrheliometry within three parts in one thousand as the result of a long series of experiments with various pyrheliometers. The establishment of this scale through Mr. Abbot's standard pyrheliometer has been supplemented by the distribution abroad and at home of several secondary pyrheliometers constructed through a grant from the Hodgkins Fund. The constancy of the scale of these secondary pyrheliometers has been established and it is desirable to compare this scale with those in use elsewhere. It is hoped that finally all pyrheliometric observations will be made on the same scale as that used here.

(2) The second result of the year's work is the agreement within 1 per cent of the "solar-constant" observations obtained by Mr. Abbot at the Smithsonian Mount Whitney station in California at an elevation of 14,500 feet with those obtained simultaneously at the Mount Wilson station in California at an elevation of only 6,000 feet. This determination, in combination with the above-mentioned establishment of an absolute scale of pyrheliometry, gives 1.925 calories per square centimeter per minute as a mean value, for the period 1905–1909, of the rate at which the earth receives heat from the sun when at its mean distance. Determinations made with various forms of apparatus show no systematic difference in this value of the "solar constant." In 1905 this "constant," according to various authorities, was stated at values ranging between 1.75 and 4 calories.

It is improbable that observations would have been continued since 1902 on "solar-constant" work but for a suspected variability of the radiation sent to us from the sun. The laws governing this variability are of extreme importance for utilitarian purposes apart from

their interest to astronomers. While confident of the existence of variations of this value extending over somewhat long periods and of the probability of short-period variations as shown by the observations obtained on Mount Wilson, yet, in order to establish full confidence in the minds of others of this variability of the sun's heat, there is a very pressing need of observations made simultaneously at some other place where they could be made over a longer period than is possible at Mount Whitney. This new station should be so situated that observations could be continued there while the winter rainy season prevents them at Mount Wilson. A station in Mexico would best fulfill such conditions.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

The purpose of the International Catalogue of Scientific Literature is to collect and publish in 17 annual volumes a classified index of the current scientific publications of the world. This is accomplished through the cooperation of 32 of the principal countries of the world, which by means of regional bureaus, one in each country, prepare the data necessary to index all scientific publications issued within their domains. The material thus prepared is forwarded to a central bureau in London for publication in the annual volumes.

The various subscribers throughout the world bear the entire cost of the actual printing and publication by the central bureau, but each country taking part in the enterprise bears the expense of indexing and classifying its own publications.

The 17 annual volumes combined contain from 10,000 to 12,000 printed pages. The regional bureau for the United States furnishes yearly about 30,000 citations to American scientific literature, which is between 11 and 12 per cent of the total for the world. The bureau for this country was for several years maintained from the funds of the Smithsonian Institution, but is now supported through annual congressional appropriations.

Millions of dollars are being spent each year in scientific investigations, and many of the foremost men of the day are devoting their entire time to such work. The results of their labors find publicity through some scientific journal, of which there are over 5,000 that are regularly indexed by the various regional bureaus, over 500 of these journals being published in the United States. The titles of hundreds of books and pamphlets are likewise cited in this International Catalogue. There is thus furnished in condensed, accurate, and permanent form a minutely classified index to practically all the scientific literature of the world, for the method of classification actually furnishes a digest of the contents, as well as the usual bibliographical data, for each publication.

It is interesting to mention that a plan for a work of this character was proposed by the Smithsonian Institution as early as 1855, when Secretary Henry, of the Smithsonian Institution, called the attention of the British Association for the Advancement of Science to the great need of an international catalogue of scientific works. In 1867 the Royal Society published its well-known "Catalogue of Scientific Papers," and the Smithsonian Institution from time to time has issued catalogues of the literature of special branches of science. In 1894 the Royal Society invited the governments of the world to send delegates to a conference to be held in London in 1896. At this and the following conferences in 1898 and 1900 a plan was formulated to start the work with a classified subject and author catalogue of all original scientific literature, beginning with January 1, 1901.

Respectfully submitted.

CHARLES D. WALCOTT, *Secretary.*

Appendix I.

REPORT ON THE UNITED STATES NATIONAL MUSEUM.

Sir: I have the honor to submit the following report on the operations of the United States National Museum for the fiscal year ending June 30, 1910:

CONSTRUCTION AND OCCUPATION OF THE NEW BUILDING.

The subjects of greatest concern during the past year have been those connected with the erection and occupation of the new building. By the end of the year essentially all of the building except the interior of the south pavilion and the granite approaches had been structurally finished. The last stones in the approaches, however, were laid toward the end of July, 1910, leaving, at the time of writing this report, only the pavilion, or rotunda, which will require several months more for its completion on account of certain decorative features, though these are neither elaborate nor expensive. The auditorium, which occupies most of the ground floor of the pavilion, is expected to be in readiness by October.

In the general deficiency act passed near the close of the last session of Congress provision was made for the improvement of the grounds immediately about the building. This work includes granolithic roads and walks to the north entrance and along both sides of the building to the east and west entrances, where coal, collections, and supplies are delivered; the grading of the embankment just south of the building and the construction of a narrow service road in the intervening area; the sodding or seeding of all surfaces intended to be kept as lawns; and the readjustment of one of the main roads of the Mall so as to cause it to pass directly in front of the south approaches. These important matters will be attended to by the officer in charge of public buildings and grounds, in whose province they belong.

The pressure for additional space on account of the emptying of the rented buildings and the rapid growth of collections made it imperative to begin the occupation of the new building before its completion. During May and June, 1909, the contents of the rented buildings were carried over and stored on some of the finished floors in the exhibition halls and in one of the open courts. Two months later possession of the third story was obtained from the superintendent of construction, although at that time none of the rooms were provided with doors and temporary expedients had to be resorted to for the protection of such material as was first moved. On November 9, 1909, the Museum accepted control of all parts of the building aside from the south pavilion, and while there was still much work of a minor character in progress, operations were not materially interfered with on that account. The transfer of the collections, laboratories, and workshops has proceeded rapidly, but not as satisfactorily as was hoped for, owing mainly to delays in obtaining furniture, an undertaking of great magnitude, considering that the floor area to be provided for is in the neighborhood of 10 acres.

It may be explained that the first and second floors of the building are designed wholly for exhibition purposes. There is one large exhibition hall

on the ground floor, which also contains the heating and power plant, and the wood and metal work shops. Otherwise, this floor, and the third floor and attic, are allotted to the immense reserve collections in all branches of natural history, the laboratories, preparators' rooms and administrative offices. It is planned with reference to these three floors to use only metal furniture as far as possible, especially for the storage of specimens, since the fire risk is greater in the relatively small closed rooms than in the large exhibition halls, through which a clear view can be had at all times. The danger of fire or of its spread has, however, been reduced to a minimum, first through the use of metal doors supplementing the otherwise fireproof construction, and, second, through a system of alarms, fire plugs and fire extinguishers. While the metal as well as wooden storage cases are made in several styles to meet the requirements of different classes of specimens, the rule of construction along unit lines continues to be followed. The large demand created by the needs of the new building has given rise to a keen competition among manufacturers of steel furniture, and resulted in a quality of workmanship which is highly gratifying.

A certain amount of fireproof storage furniture had been constructed during the year 1908–9, but it was not until the beginning of last year that the larger orders could be placed, and a considerable amount of work was also done in the Museum shops. As it was deemed most important to first complete the furnishing of the working quarters, very little has been done in the matter of exhibition cases, but the requirements of the public halls will be given active consideration during the current year.

Considerably more than half of the natural history collections, both reserve and exhibition, were transferred during the year, and it is expected that the entire moving will be completed before winter. The only exhibition series opened to the public were those referred to below in connection with the National Gallery of Art, but the arrangement of other halls was in progress when the year closed. For the division of plants, the second story of the main part of the Smithsonian building is being fitted up.

From what has been said it will be noted that with the readjustments now in progress all of the collections relating to natural history, including anthropology, but excluding the herbarium, will soon be segregated in the new building, which was specially planned for that branch of the Museum. The installation of the paintings of the National Gallery of Art in the middle wing of the building, as described below, is virtually an intrusion, and it is expected that in due time more appropriate accommodations will be found for this important and rapidly growing department.

The great difference in the amount of space required by each of the respective departments and their branches, dependent upon the size of their collections, has rendered impossible any exact division between them of the floor area of the building, and the claims of each has been decided according to the actual needs. In a general way anthropology has been given the middle part of the building, biology the western side, and geology the eastern side. This division of space extends essentially from the ground floor to the attic, and, in view of the many elevators and stairways provided, the arrangement is not inconvenient. It gives to each of the departments one of the large halls, and, as all of these halls open on the rotunda, a visitor entering by the main doorway may proceed directly to whichever department he desires.

NATIONAL GALLERY OF ART.

Mr. William T. Evans contributed 32 paintings and 1 fire etching to his collection of the works of contemporaneous American artists, which now numbers 114

well-selected examples by 80 painters. This important gift, which is attracting wide attention and receiving the highest commendation, has already done much toward advancing the interests of American art, and it is worthy of mention that one of its canvases was exhibited abroad in the early spring. It should also be stated that during a trip to the Orient Mr. Charles L. Freer secured many choice additions to his collection, still remaining in his custody in Detroit, the formal transfer of which, as the third supplement to the original gift, was made to the Institution in July, 1910.

Early in July, 1909, it became necessary to move the Evans collection from the Corcoran Gallery of Art to the improvised picture gallery in the older Museum building, and this in turn required the temporary retirement from public view of many of the paintings which had previously been installed there. The importance of having the entire collection kept together and on exhibition, however, led to an arrangement for its maintenance in the new building, pending the time when a more appropriate home can be found for the department of the fine arts. The location selected was the central skylighted part of the middle hall, which is 50 feet wide and has been utilized to a length of about 130 feet. This area was inclosed with screen walls of a suitable character for hanging paintings and was divided into 7 rooms of varying size. Here all of the paintings belonging to the gallery, together with many loans, were assembled in time to have an informal opening on the 17th of March, 1910, which was largely attended. Some of the more interesting ethnological groups and historical exhibits were also installed for the same occasion in the surrounding parts of the hall and adjacent ranges, and the first visitors to the new building were, therefore, given the opportunity to judge of its advantages for exhibition purposes. At the close of the year preparations had been made for extending the limits of the gallery so as to include the entire space below the skylight.

ART TEXTILES.

With the removal of the paintings from the gallery in the older Museum building and of the large screens except the one at the east end, this entire hall became available for the collection of art objects commenced two years ago at the suggestion of Mrs. James W. Pinchot, who has continued to give her personal attention to its growth and arrangement. Consisting fundamentally of laces, it comprises other art textiles and fabrics such as embroideries, tapestries, brocades, and velvets; and also fans, enamels, porcelains, silver work, ivory carvings, jewelry, etc. Besides many loans there were two important donations during the year. One was from Mrs. Pinchot and consisted of 61 pieces of lace, purchased abroad expressly for the collection and with a view to its needs. The other was from Miss Anna R. Fairchild, and comprised 12 pieces of lace and 7 fans, formerly belonging to the late Miss Julia S. Bryant, in whose memory they were presented. The laces are of several varieties, mostly of large size, dating back to the seventeenth century, and are of great beauty and value. Just before the close of the year additional cases were provided and the entire collection was rearranged. It is now one of the most attractive features in the Museum.

COMMEMORATIVE TABLET.

It is especially pleasing to note the acquisition of a large bronze tablet, interesting both historically and artistically, executed by the sculptor, Isidore Konti, for the Hon. Truxton Beale, who has recognized the National Museum as a fitting place for its installation. It symbolizes an act of heroism during the war with Mexico, by which the two participants, whose figures appear in relief on the tablet, namely, Passed Midshipman (afterwards General) Edward F. Beale

and Kit Carson, obtained succor for a band of American soldiers surrounded by the enemy. This tablet, which measures 11 feet high by 7 feet wide, was erected in the north entrance hall of the new building, and unveiled, with simple ceremonies, on May 31, 1910.

ADDITIONS TO THE COLLECTIONS.

The total number of specimens received during the year was approximately 970,698, of which 933,998 were zoological and botanical, 17,979 were geological and paleontological, and 18,721 belonged to the several divisions comprised in the department of anthropology. The unprecedented record for biology resulted from the transfer of a special large collection from one of the government departments, as explained below. While North America was, as usual, most extensively represented in the additions, the accessions from abroad were exceptionally numerous and valuable, and in a notable degree furnished material for important contributions to science.

The most noteworthy accession was that received from the Smithsonian African Expedition under the direction of Col. Theodore Roosevelt, who was accompanied by his son, Mr. Kermit Roosevelt, and, on the part of the Institution, by Dr. Edgar A. Mearns, U. S. Army, Mr. Edmund Heller, and Mr. J. Alden Loring. This expedition, which was entirely financed from private sources, reached Mombasa on April 21, 1909, spent eight months in British East Africa, and thence proceeded through Uganda and down the White Nile to Khartum, where it arrived on March 14, 1910. Field work was energetically prosecuted in all parts of the region visited and ample notes were made. The resultant collection, sent in several installments, reached Washington in excellent condition, and constitutes the largest and most important single gift of natural history objects ever received by the Museum. A preliminary census indicates that it comprises about 4,897 mammals, 4,000 birds, 2,000 reptiles and batrachians, and 500 fishes, besides large numbers of mollusks, insects, crustaceans, and other invertebrates, and several thousand plants. The series of large and small mammals from East Africa is, collectively, probably more valuable than is to be found in any other museum in the world, its importance depending not so much on the number of new forms as on the fact that it affords an adequate basis for a critical study of the mammal fauna of East Africa and the establishment or rejection of the large number of forms which have been described, especially in recent years, from insufficient material. The series of birds, reptiles, and plants are also exceedingly valuable, and the material representing other groups is certain to furnish interesting results when studied.

An exploration of certain parts of Java by and at the expense of Mr. Owen Bryant, of Cohasset, Massachusetts, assisted by Mr. William Palmer, of the Museum staff, resulted in the acquisition of a large and valuable collection, in which mammals and birds figure most prominently, though reptiles, insects, and marine invertebrates are extensively represented. Dr. William L. Abbott presented an important collection of ethnological objects, together with interesting specimens of mammals, birds, and reptiles, obtained by him in Borneo. Nearly 400 specimens, representing 85 species of birds from the Polynesian Islands, were received as a gift from Mr. Charles H. Townsend, of New York, by whom they were collected several years ago.

The transfers made by the United States Bureau of Fisheries, consisting mainly of material which had been studied and described, and containing a large number of types, were of great value. Of fishes there were about 30,000 specimens, of marine invertebrates about 8,000 specimens, and of reptiles and batrachians about 600 specimens. Except for many fishes from the fresh waters of the United States, the collections were derived almost wholly from the explorations of the steamer *Albatross* in different parts of the Pacific Ocean.

An extensive and very valuable series of crustaceans from the expedition of the British ship *Scalark* to the western Indian Ocean in 1905, and smaller series from the explorations of the French ship *Travailleur* and the German ship *Talisman* in the eastern Atlantic Ocean, were presented to the Museum in return for services in working up the respective collections for publication.

The Bureau of Entomology of the Department of Agriculture transferred to the Museum a most extensive and noteworthy collection, which has been in course of building up for a number of years in connection with investigations on insects injurious to forest trees. It comprises not less than 800,000 specimens, mainly beetles of the family Scotytidæ, and remains in charge of Dr. A. D. Hopkins, of the Bureau, who has been designated as its custodian in the Musuem.

The division of plants received over 33,000 specimens, including about 10,000 obtained during an expedition under the associate curator, Dr. J. N. Rose, to the southwestern United States and western Mexico; the material collected by the Smithsonian African Expedition; exchanges from the Philippine Islands, and transfers from the Department of Agriculture.

In geology and mineralogy some interesting specimens from different parts of the world were secured. The accessions in invertebrate paleontology were not only extensive but also of special importance, having been mainly the results of field work conducted during the year under the auspices of the Institution, the Museum, and the Geological Survey, accompanied by stratigraphic observations, and furnishing material for investigations of exceptional value. The largest and most noteworthy collections consisted of Cambrian fossils obtained in Alberta, Canada, by the Secretary, and in Utah and Manchuria, China, by others under his direction. Next should be mentioned Ordovician and Silurian fossils from the Ohio Valley, Utah, and the island of Anticosti, Canada, in part collected by the curator of the division and in part secured by transfer and exchange. Interesting contributions were series of Tertiary fossils from North Carolina and the State of Washington.

A number of remains of rare fossil vertebrates, some in excellent condition for mounting for exhibition, and valuable additions to the collection of mammalian remains from the Fort Union beds of Sweet Grass County, Montana, were obtained in connection with explorations by the Geological Survey and the Museum. The types and figured specimens of Cretaceous plants from New York and New England recently described and published by the Geological Survey constituted the principal acquisition in paleobotany.

Prominent among the accessions in ethnology was a large collection of objects illustrative of the Kanakas of Hawaii, gathered during a long period of years by Dr. N. B. Emerson, of Honolulu, and purchased by the Government for exhibition at the Alaska-Yukon-Pacific Exposition. The most notable of many additions in prehistoric archeology were two collections from North America and one from South America. The former resulted from excavations by Dr. J. W. Fewkes, first at the "Cliff Palace," Mesa Verde National Park, Colorado, for the Department of the Interior, and subsequently at the ruins of the Marsh Pass region, Arizona, for the Bureau of American Ethnology. The latter represents the ancient peoples of Argentina and was obtained by exchange.

Through the courtesy and generosity of the officials of the Metropolitan Museum of Art in New York Dr. Aleš Hrdlička was enabled to visit the excavations which that museum has for some time been conducting in Egypt and to secure from the tombs as they were uncovered several hundred remains of ancient Egyptians, which were carefully labeled and prepared for shipment under his personal supervision. The value of this collection, which is still to be worked up, is greatly enhanced by the fact that every specimen is well identified chronologically.

The technological collections were increased along many lines, the most important additions having been of firearms, including a number of historically interesting pieces, for which the Museum was chiefly indebted to the War Department. Also worthy of mention were series of sun dials and of watch and chronometer movements and the original machine, long in use, by which complete pins were first manufactured automatically.

The division of history was greatly enriched. The bequest of Prof. Simon Newcomb to the nation for deposit in the Museum of many personal memorials comprised, besides his uniform and sword as a rear-admiral in the navy, gold and bronze medals, vases, including a large and fine example in jasper presented by the Emperor of Russia, and 118 diplomas and announcements of honors conferred on this distinguished astronomer by universities and other learned bodies for eminence in science. Among the gifts and loans were personal relics of Admiral Farragut and Rear-Admiral Charles Wilkes, and a number of pieces of china bearing the insignia of the Society of the Cincinnati, made in China in 1790 for David Townsend, of Massachusetts.

MISCELLANEOUS.

Of duplicate specimens from the collections of the various divisions, about 6,000 were distributed to educational establishments in different parts of the country, while about 24,000 were used in making exchanges with other institutions and with individuals, whereby much valuable new material was acquired. The number of specimens sent to specialists for study in behalf of the Museum or of work in progress for other purposes was about 16,000.

The record of visitors to the public halls showed an average attendance, the total number of persons who entered the older Museum building during the year having been about 229,000. It is to be expected that the attendance at the new building when its exhibition collections have been fully arranged will be much greater than this, but not until Sunday opening has been effected, a step anticipated in the near future, can the Museum hope to meet its manifest obligations in popular education.

The publications of the year, all but one of which were descriptive of material in the collections, comprised the annual or administrative report for 1909, one volume of Proceedings, one of Contributions from the National Herbarium, 8 bulletins, and 55 separate papers belonging to three uncompleted volumes.

Because of the insufficient funds provided for the purchase of books the library of the Museum still serves very inadequately the purposes for which it is maintained, the classification of the collections, and important work is often much hindered on this account. At the close of the year it contained 38,300 volumes and 61,858 unbound papers.

Mr. William H. Holmes, who has served as Chief of the Bureau of American Ethnology since 1902, returned to the Museum in January to again take up the duties of head curator of the department of anthropology. It is with deep regret that I announce the deaths, at advanced ages, of two of the honorary associates of the Museum, Dr. Charles A. White and Dr. Robert E. C. Stearns, once active members of its staff, both of whom became widely known through their important contributions to science during many years, the former especially in paleontology, the latter in zoology.

Respectfully submitted.

RICHARD RATHBUN,
Assistant Secretary, in Charge of U. S. National Museum.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

AUGUST 27, 1910.

Appendix II.

REPORT ON THE BUREAU OF AMERICAN ETHNOLOGY.

Sir: I have the honor to submit the following report of the operations of the Bureau of American Ethnology during the fiscal year ended June 30, 1910, conducted in accordance with the act of Congress approved March 4, 1909, authorizing the continuation of ethnological researches among the American Indians and the natives of Hawaii, under the direction of the Smithsonian Institution, and in accordance with the plans of operations approved by the Secretary on June 1, 1909, and January 7, 1910.

During the first half of the fiscal year the administration of the Bureau was under the immediate charge of Mr. William H. Holmes, who, on January 1, 1910, severed his official connection with the Bureau in order to resume his place as head curator of anthropology in the United States National Museum and to become curator of the National Gallery of Art, as well as to enable him to take advantage of the facilities afforded by the change for publishing the results of his various archeological researches. Mr. F. W. Hodge was designated on the same date to assume the administration of the Bureau under the title "ethnologist in charge."

In view of the approaching change and of the necessity for devoting much of his time to affairs connected with the Department of Anthropology of the National Museum and the National Gallery of Art and the administration of the Bureau, Mr. Holmes found it impracticable to give attention to field research during the remainder of 1909. Good progress was made in the preparation of the Handbook of American Archeology, to which he had devoted much attention during the year and to which reference has been made in previous reports.

The systematic ethnological researches of the Bureau were continued as in previous years with the regular force of the Bureau, consisting of eight ethnologists, increased to ten toward the close of the year by the appointment of two additional members of the staff, and finally decreased by the death of one member. In addition, the services of several specialists in their respective fields were enlisted for special work, as follows:

Prof. Franz Boas, honorary philologist, with several assistants, for research in the languages of the American aborigines, particularly with the view of incorporating the results in the Handbook of American Indian Languages.

Miss Alice C. Fletcher and Mr. Francis La Flesche, for continuing the revision of the proofs of their monograph on the Omaha Indians, to be published as the "accompanying paper" of the Twenty-seventh Annual Report.

Miss Frances Densmore, for researches in Indian music.

Mr. J. P. Dunn, for studies of the tribes of the Algonquian family residing or formerly resident in the Middle West.

Rev. Dr. George P. Donehoo, for investigations in the history, geography, and ethnology of the tribes formerly living in western Pennsylvania and southwestern New York, for incorporation in the Handbook of American Indians.

Mr. William R. Gerard, for studies of the etymology of Algonquian place and tribal names and of terms that have found their way into the English language, for incorporation in the same work.

Prof. H. M. Ballou, in conjunction with Dr. Cyrus Thomas, for bibliographic research in connection with the List of Works Relating to Hawaii, in course of preparation for publication.

The systematic ethnological researches by members of the regular staff of the bureau are summarized as follows:

Mr. F. W. Hodge, ethnologist-in-charge, when administrative work permitted devoted his attention almost exculsively to the editing of the Handbook of American Indians (pt. 2), which was so far advanced toward completion at the close of the fiscal year that it seemed very probable the volume would be ready for distribution within about six months. As the work on part 2 was in progress, advantage was taken of the opportunity afforded by the necessary literary research in connection therewith to procure new data for incorporation in a revised edition of the entire work, which it is proposed to issue as soon as the first edition of part 2 has appeared. The demand for the handbook is still very great, many thousands of requests having been received which could not be supplied owing to the limited edition.

With the exception of a brief trip, Mr. James Mooney, ethnologist, remained in the office throughout the entire fiscal year, occupied chiefly in the elaboration of his study of Indian population, with frequent attention to work on the Handbook of American Indians, and to various routine duties, especially those connected with supplying information to correspondents. The investigation of the former and present population covers the entire territory north of Mexico, from the discovery to the present time, and involves the close examination of a great body of literature, particularly documentary records of the various colonies and of the official reports of French and Spanish explorers and commanders, together with such special collections as the Jesuit Relations and the annual Indian reports of the United States and Canadian governments from the beginning. It is also necessary, first, to fix and differentiate the tribe, and then to follow the wasting fortunes of each tribe and tribal remnant under change of name and habitat, further subdivision, or new combination, to the end. For better handling, the whole territory has been mapped into fifteen sections, each of which has its own geographic and historical unity, and can thus be studied separately. The investigation includes a summary of the Indian wars, and notable epidemics within the same region from the discovery. No similar investigation has ever before been attempted, even the official Indian reports being incomplete as to identity of tribes and number of Indians not directly connected with agencies.

In January, 1910, by request of those organizations, Mr. Mooney was designated to represent the Bureau of American Ethnology at the joint meeting of the Mississippi Valley Historical Association and the Nebraska State Historical Society, held at Lincoln, Nebraska, and delivered several addresses, with particular reference to the utilization of the methods and results of the Bureau in local ethnologic and historical research.

At the request of the Secretary of the Interior, Dr. J. Walter Fewkes, ethnologist, continued the excavation and repair of the prehistoric ruins in the Mesa Verde National Park, in southern Colorado, begun in the previous year. Doctor Fewkes commenced work on Cliff Palace in May, 1909, and completed the excavation and repair of this celebrated ruin in August. He then proceeded to northwestern Arizona, and made a reconnoissance of the Navaho National Monument, visiting and studying the extensive cliff and other ruins of that section, knowledge of the existence of which he had gained many years ago during his ethnological researches among the Hopi Indians. At the close of this investigation Doctor Fewkes returned to Washington and prepared for the Secretary of the Interior a report on the excavation and repair of Cliff Palace, which was published by the Department of the Interior in November. A more

comprehensive illustrative report on the same ruins, giving the scientific results of Doctor Fewkes's studies during the progress of the excavation of Cliff Palace, was prepared for publication as Bulletin 51 of the Bureau of American Ethnology and is now in press, forming a companion publication to his description of Spruce-tree House, published earlier in the fiscal year as Bulletin 41. Doctor Fewkes prepared also a report on his preliminary researches in the Navaho National Monument, which is in type and will be published as Bulletin 50. During the remainder of the winter and spring, Doctor Fewkes was occupied in the preparation of a monograph on Casa Grande, an extensive ruin in Arizona, excavated and repaired by him during previous years. He gave some time also to the elaboration of an account of antiquities of the Little Colorado Valley, a subject to which he has devoted considerable study. This work was interrupted in May, 1910, when he again departed for the Navaho National Monument for the purpose of continuing the archeological studies commenced during the previous field season. At the close of the year Doctor Fewkes was still at work in this region.

Owing to the large amount of material in process of publication as a result of his own researches or assigned to him by reason of his special knowledge of the subjects involved, Dr. John R. Swanton, ethnologist, devoted the year entirely to office work. Much of this time was spent in proof reading (1) Bulletin 43, Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico, the result of personal field investigations and historical study; as well as in proof reading (2) Bulletin 46, a Choctaw Dictionary, by the late Cyrus Byington; and (3) Bulletin 47, on the Biloxi Language, by the late J. Owen Dorsey, arranged and edited by Doctor Swanton, who incorporated therein the related Ofo material collected by him in 1908 and added a brief historical account of the Ofo tribe. In connection with his researches on the Southern tribes or tribal remnants, Doctor Swanton has revised and rearranged the Attacapa, Chitimacha, and Tunica linguistic material collected by the late Dr. Albert S. Gatschet and has put it almost in final form for the press. With the aid of several texts recorded in 1908, Doctor Swanton has spent some time in studying the Natchez language, preparatory to further investigations among the survivors of this formerly important group, now in Oklahoma. The remainder of his energies has been devoted chiefly to researches pertaining to the Creek Confederacy, with the aid of books and documents in the library of the Bureau and in the Library of Congress, in anticipation of field investigation among the Creek tribes to be undertaken, it is expected, later in 1910.

Mrs. M. C. Stevenson, ethnologist, continued her researches among the Pueblo tribes of the Rio Grande Valley, New Mexico, giving special attention to the Tewa group. As during the previous year her studies were devoted chiefly to the pueblo of San Ildefonso, which offers better facilities for ethnologic investigation than the other Tewa villages, although her inquiries were extended also to Santa Clara and Nambe. Owing to the extreme conservatism of the Tewa people, Mrs. Stevenson found great difficulty in overcoming their prejudices against the study of the esoteric side of their life, but with patience she succeeded finally in gaining the warm friendship of many of the more influential headmen, and by this means was enabled to pursue a systematic study of the Tewa religion, sociology, and philosophy. Like most Indians, the Tewa are so secretive in everything that pertains to their worship that one not familiar with their religious life is readily misled into believing that the ceremonies held in the public plazas of their villages which, with few exceptions, are more Mexican than Indian in outward character, constitute the sole rites of these people, whereas it has been found that the Tewa adhere as strictly

to many of their ancient customs as before white men came among them, although some of their ceremonies are now less elaborate than they were in former times.

While the creation myth of the San Ildefonso Indians differs somewhat from that of the Zuñi and of other Pueblo tribes, it is the same in all essentials. According to their belief they were created in an undermost world, and passed through three other worlds before reaching this one. The tribe is divided into the Sun or Summer, and the Ice or Winter people, the former having preceded the latter in their advent into this world, and their final home was reached on the western bank of the Rio Grande almost opposite the present pueblo. This place is marked by an extensive ruin.

Every mountain peak, near and far, within sight of San Ildefonso is sacred to the Tewa people, and they make pilgrimages at prescribed intervals to lofty heights far beyond the range of their home. The names of these sacred mountains, with a full description of each, were procured.

The philosophy of all the Pueblos is closely related in a general way, yet there are marked differences in detail. Although Mrs. Stevenson has penetrated the depths of the Tewa philosophy, she has not been able to discover any distinctive features, it being a composite of Zuñi, Sia, and Taos beliefs. The great desire of all these people, and the burden of their songs and prayers, is that rain, which in their belief is produced by departed ancestors working behind the cloud-masks in the sky, should come to fructify the earth, and that they may so live as to merit the beneficence of their deities. The entrance to this world is believed to be through a body of water, which the Tewa of San Ildefonso declare existed near their village until certain Zuñis came and spirited the water away to their own country. Further studies, no doubt, will shed more light on these interesting beliefs, and render clearer the origin and relations of Tewa and Zuñi concepts.

There are but two rain priests among the Tewa of San Ildefonso: one pertaining to the Sun people, the other to the Ice people, the former taking precedence in the general management of tribal affairs. The rain priest of the Sun is the keeper of the tribal calendar and is the supreme head of the Sun people. The governor of San Ildefonso, who is chosen virtually by the rain priest of the Sun people, is elected annually, and has greater power than that accorded a Zuñi governor. The war chief, whose religious superior is the war priest, who holds the office during life, is also elected annually, and also is a person of great power. There are three kivas, or ceremonial chambers, at San Ildefonso, one belonging to the Sun people, another to the Ice people, and one used jointly for certain civic gatherings, for rehearsal of dances, and for other purposes. The religion of the Tewa of San Ildefonso consists in worship of a supreme bisexual power and of gods anthropic (embracing celestial and ancestral) and zoic, the latter especially associated with the sacred fraternities. The fundamental rites and ceremonies of these fraternities are essentially alike among all the Pueblos. Their theurgists are the great doctors, whose function is to expel disease inflicted by witchcraft, and those of San Ildefonso have as extensive a pharmacopœia as the Zuñi theurgists. The belief of the Tewa in witchcraft is intense, and is a source of great anxiety among them. Accused wizards or witches are tried by the war chief.

Many of the San Ildefonso ceremonies associated with anthropic worship are identical with those of Taos, while others are the same as those observed by the Zuñi, although neither the ritual nor the paraphernalia is so elaborate. Some of the songs used in connection with the dances at San Ildefonso are in the Zuñi tongue. It is to be hoped that further comparative study among these people will reveal to what extent the ceremonies have been borrowed, like that of the

Koh'-kok-shi of the Zuñi, which is asserted to have been introduced by way of Santo Domingo generations ago by a Laguna Indian who had visited Zuñi.

Mrs. Stevenson devoted much attention to a study of Tewa games, finding that those regarded as of the greatest importance to the Zuñi in bringing rain have been abandoned by the San Ildefonso people. The foot race of the latter is identical with that of Taos, and is performed annually after the planting season. As complete a collection and study of the Tewa medicinal plants were made as time permitted.

The material culture of the Tewa also received special attention. Weaving is not an industry at San Ildefonso, the only weaver in the tribe being a man who learned at Laguna to make women's belts. Basketry of various forms is made of willow. The San Ildefonso people, like other Pueblos, have deteriorated in the ceramic art, and they have now little or no understanding of the symbols employed in pottery, except the common form of cloud and rain. Their method of irrigation is the same as that observed by the neighboring Mexicans, who, having acquired extensive tracts of land from the San Ildefonso land grant, work with the Indians on the irrigating ditches for mutual benefit. The San Ildefonso people raise a few cattle and horses, but no sheep. Much of their land is owned in severalty, and their chief products are corn, wheat, and alfalfa. The women raise melons, squashes, and chile.

While marriages, baptisms, and burials are attended with the rites of the Catholic Church, a native ceremony is always performed before the arrival of the priest. While their popular dances of foreign admixture are sometimes almost depleted by reason of intoxication, no such thing happens when a purely Indian ceremony is performed, for the dread of offending their gods prevents them from placing themselves in such condition as not to be able to fulfill their duty to the higher powers.

Mrs. Stevenson not only prepared the way for a close study of the Tewa of Nambe by making a warm friend of the rain priest of that pueblo, but found much of interest at the Tigua pueblos of Taos and Picuris, especially in the kivas of the latter village. It was in an inner chamber of one of the Picuris kivas that the priests are said to have observed their rites during the presence of the Spaniards. Another interesting feature observed at Picuris was the hanging of scalps to a rafter in an upper chamber of a house, the eastern side of which was open in order to expose the scalps to view. At Picuris the rain priests, like those of Zuñi and San Ildefonso, employ paddle-shaped bone implements (identical with specimens, hitherto undetermined, found in ruins in the Jemez Mountains and now in the National Museum) for lifting the sacred meal during their rain ceremonies.

During a visit to Taos Mrs. Stevenson obtained a full description of an elaborate ceremony performed immediately after an eclipse of the sun.

After her return to Washington, in February, Mrs. Stevenson devoted attention to the preparation of a paper on the textile fabrics and dress of the Pueblo Indians. For comparative studies it was necessary to review a large number of works on the general subject and to examine collections pertaining thereto. Mrs. Stevenson also prosecuted her studies of medicinal and edible plants.

During the entire fiscal year Mr. J. N. B. Hewitt, ethnologist, was engaged in office work devoted chiefly to studies connected with the Handbook of American Indians, especially part 2. A number of articles designed for this work had been prepared by other collaborators, but were recast by Mr. Hewitt in order to embody in them the latest views regarding their subject-matter. Mr. Hewitt also conducted extensive researches into the history of the Indians of the Susquehanna River during the seventeenth century, and their relations with

neighboring peoples, resulting in the discovery that a number of important tribes were designated by the names Susquehanna, Conestoga or Andastes, Massawomek, Erie, Black Minquas, Tehotitachsae, and Atrakwayeronon (Akhrakwayeronon). It is proposed to incorporate this material into a bulletin, with several early maps, in order to make it available to students of the history of the Indians of Pennsylvania and New York, and their relations with white people. Mr. Hewitt also devoted about two months to the translation of Onondaga native texts relating to the New Year ceremony, and began work on the classification of the late Jeremiah Curtin's Seneca legends, with a view of preparing them for publication by the Bureau.

As custodian of the linguistic manuscripts in the Bureau archives, Mr. Hewitt spent considerable time in installing this material, comprising 1,704 items, on its removal from the former quarters of the Bureau to the Smithsonian building. He was frequently occupied also in receiving manuscripts and in searching and charging those required by collaborators either for temporary or for prolonged use. Much time and labor were also devoted by Mr. Hewitt to the collection and preparation of data of an ethnological character for replies to correspondents.

Dr. Cyrus Thomas, ethnologist, while not engaged in revising the proofs of Bulletin 44, Indian Languages of Mexico and Central America and their Geographical Distribution, prepared by him with the assistance of Doctor Swanton, devoted his attention to the elaboration of the List of Works Relating to Hawaii, with the collaboration of Prof. H. M. Ballou. Toward the close of the fiscal year, this work having been practically finished, Doctor Thomas undertook an investigation of the relations of the Hawaiians to other Polynesian peoples, but unfortunately this work was interrupted in May by illness which terminated in his death on June 26. Doctor Thomas had been a member of the Bureau's staff since 1882 and, as his memoirs published by the Bureau attest, one of its most industrious and prolific investigators.

As the result of a special civil-service examination held March 3, 1910, the staff of the Bureau was increased by the appointment, as ethnologists, of Dr. Truman Michelson on June 1 and of Dr. Paul Radin on June 3.

Doctor Radin immediately made preparations to resume his researches among the Winnebago Indians in Nebraska and Wisconsin, commenced under personal auspices three years before, and by the close of the fiscal year was making excellent progress toward completing his studies of this important Siouan group.

About the same time Doctor Michelson departed for Montana with the purpose of studying the Blackfeet, Northern Cheyenne, and Northern Arapaho, Algonquian tribes, whose relations to the other members of the stock are not definitely known. It is the intention that Doctor Michelson obtain a view of the relations of the Algonquian tribes generally, in order that he may become equipped for an exhaustive study of the Delaware and Shawnee tribes, so important in the colonial and later history of the United States. Doctor Michelson reached the Blackfoot country on June 16, and within a few days had recorded a considerable body of ethnological, mythological, and linguistic material relating to the Piegan division.

The special researches of the Bureau in the linguistic field were conducted, as in the past, by Dr. Franz Boas, honorary philologist, whose work during the fiscal year resulted in bringing nearly to completion the first volume of the Handbook of American Indian Languages. The whole matter is in type, 735 pages were in practically final form at the close of the fiscal year, and the sketches of only three languages remained to be revised before paging. Besides the purely technical work of revising and proof reading, the most important work on the

first volume was a thorough revision of the Algonquian sketch by Dr. William Jones, who had planned to make certain additions to the manuscript, but whose unfortunate death in the Philippine Islands left his researches on the Algonquian languages incomplete. The revision was assigned to Dr. Truman Michelson, who made a careful comparison between Doctor Jones's description of the language and his published collection of texts.

Considerable progress was made on the preparation of the second volume of the Handbook of American Indian Languages. Owing to the increase in size of a number of the original sketches, which was due to the lapse of time since they were first recorded, the first volume had increased so much in size that it became necessary to relegate the Takelma to the second volume.

At the beginning of the fiscal year Dr. Leo J. Frachtenberg carried on investigations under the direction of Doctor Boas among the Coos Indians of Oregon. He succeeded in collecting a considerable body of texts from the survivors, and at the same time revised the material collected several years ago by Mr. H. H. St. Clair, 2d. Doctor Frachtenberg completed his studies of the grammar of the language, and the manuscript of this sketch for the second volume was delivered and is partly in type. Toward the end of the year Doctor Frachtenberg made preparatory studies on the Alsea language of Oregon, based on manuscript texts collected a number of years ago by Prof. Livingston Farrand on an expedition due to the generosity of the late Mr. Henry Villard. The completion of the ethnological research work among the Alsea has been provided for by a contribution of funds by Mrs. Villard, which will make it possible to complete also the linguistic investigation of the tribe during the field season of 1910. In June Doctor Frachtenberg visited two survivors of the Willopah tribe who were said to remember the language, but unfortunately only about 300 words could be obtained, and practically no grammatical forms.

Further preparatory work on the second volume of the Handbook of American Indian Languages was carried on by Mr. James Teit, who elucidated the details of the distribution of the Salish dialects of the State of Washington. Part of this work was supported by the generosity of Mr. Homer E. Sargent, of Chicago.

The special researches in Indian music were continued in behalf of the Bureau by Miss Frances Densmore, who has done so much toward preserving the vanishing songs of the Indians. The principal new phase that has arisen in Miss Densmore's work is the importance of the rhythmic unit in Chippewa songs. Her observations indicate that the rhythmic phrase is the essential element of the song; indeed Miss Densmore is inclined to think that the first idea of the song may be a mental rhythm assuming the form of a short unit, and that its expression follows the overtones of a fundamental which exists somewhere in the subconsciousness of the singer. The tabulated analyses show that 99 out of 180 songs to appear in Bulletin 45 (in press) begin on the twelfth or fifth, and 34 begin on the octave—a total of 133 out of 180 beginning on the principal overtones. Of 180 songs, 120 end on the tonic, and yet the tonic does not usually appear until near the close of the song.

Melodic phrases are seldom recurrent. In the oldest songs the words are sung between repetitions of the rhythmic unit, and have a slight rhythm and small melody progressions. Rhythm varies less often than earlier words or melody in repetition, especially when the rhythm is comprised in a definite unit. All these facts emphasize the importance of the rhythm, and also have a bearing on the problem of the development of primitive music, which it is designed to treat in a practical rather than in a theoretical way.

The independence of voice and drum noted by Miss Densmore in previous studies was further shown by the data collected during the year; also the prominence of the descending interval of the minor third, and the marked use of overtones in the choice of melodic material.

The songs collected comprise a group of 40 secured at Ponima, a remote village on the Red Lake Reservation, Minnesota, and the series of war songs which Miss Densmore is now completing and which she expects to finish before the close of the calendar year. It is the intention to combine the analyses of these with the analyses contained in Bulletin 45 of the Bureau, always bringing forward previous work, in order that the results may be cumulative. It is Miss Densmore's desire, before leaving the Chippewa work, to analyze about 500 songs collected from a representative number of localities, as the data derived from systematic analyses of that number of songs should be a safe basis for what might be termed a scientific musical study of primitive song.

Miss Alice C. Fletcher and Mr. Francis La Flesche have continued the proof revision of their monograph of the Omaha Indians to accompany the Twenty-seventh Annual Report, a part of which was in page form at the close of the fiscal year.

Mr. J. P. Dunn pursued his studies of the Algonquian tribes of the Middle West under a small allotment of funds by the Bureau, but comparatively little progress was made, as it was found advisable to hold the investigations somewhat in abeyance until two important manuscript dictionaries—one of the Peoria, the other of the Miami language—known to exist, could be carefully examined, with a view of avoiding repetition of effort. Mr. Dunn was enabled, however, to revise and annotate completely a text in the Miami and Peoria dialects recorded by the late Doctor Gatschet.

PUBLICATIONS.

The editorial work of the Bureau was conducted by Mr. J. G. Gurley, who from time to time, as pressure required, had the benefit of the aid of Mr. Stanley Searles. All the publications of the Bureau have passed under Mr. Gurley's editorial supervision, with the exception of part 2 of Bulletin 30 (Handbook of American Indians), which has been in special charge of Mr. F. W. Hodge, editor of the work, assisted by Mrs. F. S. Nichols. In order to facilitate progress in the publication of the Handbook of American Indian Languages, the editor thereof, Dr. Franz Boas, assumed entire charge of the proof reading in January, thus enabling Mr. Gurley to devote more time to the numerous other publications passing through press.

In all, the manuscripts of seven publications—Bulletins 37, 44, 45, 48, 49, 50, and 51—were prepared for the Government Printing Office, while proof reading was continued on nine publications—the Twenty-seventh Annual Report and Bulletins 30 (part 2), 38, 39, 40 (part 1), 41, 43, 46, and 47, which were in hand in various stages of progress at the beginning of the fiscal year. The number of publications issued was five—Bulletins 38, 39, 41, 48, and 49. The Twenty-seventh Annual Report is in type and a substantial beginning was made toward putting it into page form. The proof of the "accompanying paper" on the Omaha Indians, by Miss Fletcher and Mr. La Flesche, was critically read by the authors and is in condition to be completed in a few months. Bulletins 37 and 43 are practically ready for the bindery, and Bulletins 40 (part 1) and 45 are nearly as far advanced. Bulletin 44 had the benefit of revision by the principal author, Dr. Cyrus Thomas, shortly before his death, and a second galley proof was received. The first galley proof of Bulletins 50 and 51 was placed

in the hands of the author, Doctor Fewkes, for revision. Owing to the condition of the Bureau's allotment for printing and binding, as reported by the Public Printer, and on his suggestion that the work for the fiscal year be curtailed, Bulletins 46 and 47 were not carried beyond the first galley stage. Appended is a list of the publications above mentioned, with their respective titles and authors:

Twenty-seventh Annual Report (1905–6), containing accompanying paper entitled "The Omaha Tribe," by Alice C. Fletcher and Francis La Flesche.

Bulletin 37. Antiquities of Central and Southeastern Missouri, by Gerard Fowke.

Bulletin 38. Unwritten Literature of Hawaii, by Nathaniel B. Emerson, A. M., M. D.

Bulletin 39. Tlingit Myths and Texts, by John R. Swanton.

Bulletin 40. Handbook of American Indian Languages (Part 1), by Franz Boas.

Bulletin 41. Antiquities of the Mesa Verde National Park: Spruce-tree House, by J. Walter Fewkes.

Bulletin 43. Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico, by John R. Swanton.

Bulletin 44. Indian Languages of Mexico and Central America, and their Geographical Distribution, by Cyrus Thomas, assisted by John R. Swanton.

Bulletin 45. Chippewa Music, by Frances Densmore.

Bulletin 46. Choctaw Dictionary, by Cyrus Byington, edited by John R. Swanton.

Bulletin 47. A Dictionary of the Biloxi Language, accompanied by thirty-one texts and numerous phrases, by James Owen Dorsey; arranged and edited by John R. Swanton.

Bulletin 48. The Choctaw of Bayou Lacomb, St. Tammany Parish, Louisiana, by David I. Bushnell, jr.

Bulletin 49. List of the Publications of the Bureau of American Ethnology.

Bulletin 50. Preliminary Report on a Visit to the Navaho National Monument, Arizona, by Jesse Walter Fewkes.

Bulletin 51. Antiquities of the Mesa Verde National Park: Cliff Palace, by Jesse Walter Fewkes.

The preparation of the illustrations for the publications of the Bureau and of photographs of Indian types continued in charge of Mr. DeLancey Gill, illustrator, assisted by Mr. Henry Walther. This material consists of 97 Indian portraits from life, 121 negatives and 29 drawings for the Bureau publications, 15 copies of negatives, and 676 photographic prints. As in the past, special attention was devoted to the photographing of the members of visiting deputations of Indians, since by this means favorable opportunity is afforded for permanently portraying the features of many of the most prominent Indians belonging to the various tribes.

LIBRARY.

The library of the Bureau continued in immediate charge of Miss Ella Leary, librarian. During the year about 1,500 volumes and about 600 pamphlets were received and catalogued; and about 2,000 serials, chiefly the publications of learned societies, were received and recorded. One thousand five hundred volumes were sent to the bindery, and of these all but 600 had been bound before the close of the fiscal year. In addition to the use of its own library, it was found necessary to draw on the Library of Congress from time to time for the loan of about 800 volumes. The library of the Bureau now contains 16,050

volumes, about 11,600 pamphlets, and several thousand unbound periodicals. Although maintained primarily as a reference library for the Bureau's staff, its value is becoming more and more known to students not connected with the Smithsonian Institution, who make constant use of it. During the year the library was used also by officers of the executive departments and the Library of Congress.

MANUSCRIPTS.

During the first half of the fiscal year the manuscripts were under the custodianship of Mr. J. B. Clayton, and on his indefinite furlough at the close of 1909 they were placed in charge of Mr. J. N. B. Hewitt, as previously noted. Nineteen important manuscripts were acquired during the year, of which seven are devoted to Chippewa music and are accompanied with the original graphophone records, five relate to the history of the Indians, and seven pertain to Indian linguistics. This enumeration does not include the manuscript contributions to the Handbook of American Indians and the Handbook of American Indian Languages, nor the manuscripts submitted for publication by the members of the Bureau's regular staff.

REMOVAL OF OFFICES.

Quarters in the Smithsonian building having been assigned by the Secretary for the use of the Bureau, and funds having been provided by the sundry civil act for the removal of the Bureau's property, the work of transfer was commenced on December 10, 1909, by removing the library from the third floor of the Adams Building, 1333 F street NW., to the eastern gallery of the bird hall on the main floor of the Smithsonian building. The task was made difficult owing to the necessity of removing the old stacks and the books at the same time, but order was fairly established in about a fortnight and the library again put in service. Not only is more space for the growing library afforded by the new quarters, but increased light and facilities for research make the new library far superior to the old. The northern half of the gallery was made more attractive by painting and by carpeting with linoleum. It is yet lacking in necessary space, but this difficulty will be overcome when that part of the southeastern gallery still occupied by the National Museum is vacated.

The offices and photographic laboratory of the Bureau were removed between December 20 and 31, the former to the second, third, and fourth floors of the north tower of the Smithsonian building and one room (that occupied by the ethnologist-in-charge) on the third floor of the northeastern range; the laboratory to one of the galleries of the old National Museum building, while the stock of publications was given space on the fourth floor of the south tower. Although the quarters of the Bureau are now somewhat scattered, the facilities for work are far superior to those with which the Bureau in its rented offices was obliged to contend, and there is less danger of loss by fire. The cost of the removal, including the taking down and rebuilding of the library bookcases, necessary painting of walls and woodwork, linoleum floor covering, and electric wiring and fixtures, aggregated $1,000, the sum appropriated for the purpose.

PROPERTY.

In addition to the books and manuscripts already referred to, the property of the Bureau consists of a moderate amount of inexpensive office furniture, chiefly desks, chairs, filing cases, and tables, as well as photographic negatives, apparatus, and supplies, typewriters, phonographs, stationery, and the undistributed stock of its publications. The removal of the Bureau and the assign-

ment of its members to less crowded quarters made it necessary to supply a few additional articles of furniture, especially for the library. The entire cost of the furniture acquired during the fiscal year was $243.17.

ADMINISTRATION.

Pursuant to the plans of the secretary the clerical and laboring work of the Bureau was concentrated after the removal to the Smithsonian building by placing the routine correspondence and files, the accounts, the shipment of publications, the care of supplies and other property, and all cleaning and repairs, in immediate charge of the office of the Smithsonian Institution. This plan has served to simplify the administration of the affairs of the Bureau, has prevented duplication of effort, and has resulted in a saving of time and funds.

Respectfully submitted.

F. W. Hodge,
Ethnologist-in-Charge.

Dr. Charles D. Walcott,
Secretary of the Smithsonian Institution.

Appendix III.

REPORT ON THE INTERNATIONAL EXCHANGES.

Sir: I have the honor to submit a report on the operations of the International Exchange Service during the fiscal year ended June 30, 1910.

There was given in the last report a list of the countries to which copies of the daily issue of the Congressional Record were forwarded direct by mail in accordance with the resolution of the Congress approved March 4, 1909, setting aside a certain number of copies of the Record for exchange, through the agency of the Smithsonian Institution, with the legislative chambers of such foreign governments as might agree to send to the United States, in return, current copies of their parliamentary record or like publication. The governments of Baden, Cape of Good Hope, New Zealand, Transvaal, and Western Australia have since entered into this exchange. A complete list of the countries to which the Record is now forwarded is given below.

Australia.	Greece.	Roumania.
Austria.	Guatemala.	Russia.
Baden.	Honduras.	Servia.
Belgium.	Hungary.	Spain.
Brazil.	Italy.	Switzerland.
Canada.	New South Wales.	Transvaal.
Cape of Good Hope.	New Zealand.	Uruguay.
Cuba.	Portugal.	Western Australia.
France.	Prussia.	

There are therefore at present 26 countries with which the immediate exchange is conducted. To some of these countries, however, two copies of the Congressional Record are sent—one to the upper and one to the lower house of parliament—the total number transmitted being 31. The number of copies of the daily issue of the Congressional Record provided for this purpose is 100, the same as the number of copies of official documents set apart for international exchange. The Institution is still in correspondence with other governments regarding this immediate exchange, and the list of those countries participating will no doubt be added to from time to time.

The number of packages handled during the past year was 221,625—a decrease from the number for the preceding year of 7,250. The total weight of these packages was 484,684 pounds—a gain of 8,515 pounds. Regarding the falling off in the number of packages handled, attention should be called to the fact that the increase in 1909 was the largest in the history of the service. Had the increase for that year been normal, the total number of packages for 1910 would have shown a gradual increase over the preceding year. The gain in weight may, to a great extent, be taken as an indication that consignments containing more than one publication were more numerous than during the preceding year. This circumstance is especially true in the case of consignments for the Library of Congress, 38 boxes having been received during the past year for that library and counted as single packages.

The appropriation by Congress for the support of the service was $32,200 (the same amount as was granted for the fiscal years 1908 and 1909), and the sum collected on account of repayments was $4,446.74, making the total available resources for carrying on the system of international exchanges $36,646.74.

The exchange office continues to render assistance to the Library of Congress in obtaining foreign government documents needed to complete its sets.

It is gratifying to state that the exchange relations with Korea, which were interrupted during the late Russo-Japanese war, have been renewed, His Imperial Japanese Majesty's residency-general at Seoul having consented to act as the exchange intermediary between the two countries. The number of publications exchanged between Korea and the United States was never very large, and it is hoped that the establishment of an official medium through which consignments may be forwarded will result in a fuller interchange.

While the K. K. Statistische Central-Commission in Vienna has been acting as the exchange intermediary between Austria and the United States since 1898, it has been necessary for the Smithsonian Institution, under the arrangements entered into through the Imperial Academy of Sciences with the commission, to bear all the expenses for freight on consignments both to and from Vienna. The Government of Austria has now signified its willingness to assume its share of the cost of conducting the exchanges between the two countries, and in the future the Institution will therefore be relieved of this extra burden upon its resources. The exchange work on the part of Austria will continue to be carried on by the Statistical Commission. The thanks of the Institution are due to the president of the Imperial Academy of Sciences and to the president of the Statistical Commission for assistance in this matter.

I am very glad to be able to report that it now seems assured that the Institution will shortly be relieved of the expense of conducting the paid agency which it has maintained for many years in Leipsic to attend to the transmission and distribution of exchanges between Germany and the United States.

It is expected that in a few months there will be established in Berlin, under the auspices of the German Government, an institution to further the cultural relations between the two countries. This establishment will be known as the America Institute, and it will assume as one of its functions the transmission and distribution of German exchanges.

While the America Institute has not yet begun active operations, it is expected that it will be organized at an early day, and that it will be prepared to take over the work of the exchange agency by the end of the calendar year.

Dr. Hugo Munsterberg will be the first director of the America Institute.

It has been the practice of the Institution to forward by registered mail packages received from abroad for distribution in the United States. With a view to reducing the work in the Exchange Office and also to relieving the Post-Office Department of the extra expense entailed in handling this registered matter—numbering annually about 21,000 packages, aggregating a total weight of over 120,000 pounds—the custom of registering exchanges was discontinued on October 17, 1909, consignments now being forwarded by ordinary mail. It should be added in this connection, that the Institution is informed by the Post-Office Department that in the ordinary mail there is an average loss of only 1 package in 15,000.

Exchange consignments form part of the cargo of almost every fast steamship which leaves New York for a foreign port. It is therefore not surprising that occasionally a case is lost through the wrecking of a steamer. During the year a case containing exchanges for miscellaneous addresses in the Transvaal was destroyed while en route to Pretoria, the steamship *Norse Prince*, by which

it was transmitted, having been burned while off the coast of South Africa. The loss at sea during the latter part of 1908 of a case of exchanges for distribution in Egypt should also be noted here. This consignment was forwarded in care of the Egyptian Survey Department under date of October 22, 1908, but definite information concerning its loss has only recently been received. The senders of the packages contained in the consignments referred to were communicated with, and it is gratifying to state that, except in one or two instances, it was possible for them to supply copies of the lost publications. It may be of interest to add here that, so far as reported to the Institution, these are the only instances during the past five years in which the entire contents of exchange consignments have been lost.

INTERCHANGE OF PUBLICATIONS BETWEEN THE UNITED STATES AND OTHER COUNTRIES.

The statement which follows shows in detail the number of packages received for transmission through the International Exchange Service during the year ending June 30, 1910:

Country.	Packages.		Country.	Packages.	
	For.	From.		For.	From.
Abyssinia	1	.....	Denmark	2,082	377
Algeria	156	25	Dominica	37	.....
Angola	16	.....	Dutch Guiana	35	.....
Antigua	40	.....	Ecuador	248	.....
Arabia	27	.....	Egypt	464	3,806
Argentina	3,500	311	Eritrea	1	.....
Austria-Hungary	8,522	5,265	Falkland Islands	2	.....
Azores	41	.....	Fiji Islands	34	.....
Bahamas	36	.....	France	12,850	4,802
Barbados	110	.....	French Cochin China	65	.....
Beira	11	.....	French Guiana	13	.....
Belgium	4,377	3,572	German East Africa	32	.....
Bermudas	48	.....	Germany	24,057	8,032
Bismarck Archipelago	1	.....	Gibraltar	15	.....
Bolivia	178	52	Gold Coast	4	.....
Borneo	6	.....	Grenada	6	.....
Brazil	2,692	385	Great Britain and Ireland	22,197	6,896
British America	7,847	848	Greece	1,649	4
British Burma	20	549	Greenland	9	.....
British Central Africa	1	.....	Guadeloupe	7	.....
British East Africa	22	.....	Gautemala	494	.....
British Guiana	69	.....	Haiti	1,124	.....
British Honduras	68	.....	Hawaiian Islands	25	.....
British New Guinea	5	.....	Honduras	389	.....
Bulgaria	206	9	Hongkong	167	.....
Canary Islands	18	.....	Iceland	52	325
Cape Colony	1,830	29	India	2,793	633
Ceylon	240	.....	Italy	7,282	2,253
Chile	2,251	352	Jamaica	253	2
China	1,720	47	Japan	3,462	63
Colombia	1,298	.....	Java	274	85
Costa Rica	1,463	3	Kongo Free State	3	.....
Cuba	1,825	108	Korea	71	15
Curaçao	22	.....	Lagos	6	.....
Cyprus	6	.....	Liberia	162	1

Country.	Packages.		Country.	Packages.	
	For.	From.		For.	From.
Lourenço Marquez	102		St. Lucia	13	
Luxemburg	97		St. Martin	11	
Madagascar	34		St. Pierre and Miquelon	16	
Madeira	1		St. Thomas	14	
Malta	99		St. Vincent	6	
Martinique	13		Salvador	109	5
Mauritius	78		Samoa	18	
Mexico	1,783	255	Santo Domingo	19	
Montenegro	79	123	Sarawak	4	
Montserrat	3		Senegal	5	
Morocco	20		Servia	1,429	12
Natal	203	51	Siam	217	
Netherlands	3,276	1,488	Sierra Leone	21	
Nevis	13		Society Islands	12	
Newfoundland	152	1	South Australia	2,021	39
New South Wales	2,896	734	Spain	2,853	269
New Zealand	2,507	110	Straits Settlements	230	
Nicaragua	221		Sudan	43	1
Norfolk Island	15		Sweden	3,255	106
Northern Nigeria	5		Switzerland	4,029	1,304
Norway	2,190	514	Tahiti	13	
Orange River Colony	115		Tasmania	1,285	2
Panama	128		Transvaal	1,594	24
Paraguay	156		Trinidad	126	
Persia	45		Tripoli	2	
Peru	1,547	92	Tunis	44	6
Philippine Islands	203		Turkey	1,580	1
Porto Rico	24		Turks Islands	21	
Portugal	1,889	992	Uganda	1	
Queensland	1,494	76	United States	48,989	173,951
Reunion	30		Uruguay	1,971	62
Rhodesia	66		Venezuela	1,283	10
Roumania	747	33	Victoria	3,618	248
Russia	5,836	2,019	Western Australia	1,564	248
St. Croix	5		Zanzibar	13	
St. Helena	4				
St. Kitts	23		Total	221,625	221,625

During the year there were sent abroad 2,033 boxes (an increase over 1909 of 70 boxes), of which 220 contained complete sets of United States Government documents for authorized depositories and 1,813 were filled with departmental and other publications for depositories of partial sets and for distribution to miscellaneous correspondents.

EXCHANGE OF GOVERNMENT DOCUMENTS.

The number of packages sent abroad through the International Exchange Service by United States Government establishments during the year was 138,152, an increase over the number forwarded during the preceding twelve months of 15,812; while 18,017 packages were received in exchange, a decrease of 2,199. This disparity between the number of packages received and those sent may be accounted for largely by the fact that many returns for the publications sent abroad are not made through the Exchange Service, but are for-

warded to their destinations direct by mail. This difference is further due to the practice of sending consignments to the Library of Congress intact, in many cases a whole box of publications being entered on the records of this office as one package.

FOREIGN DEPOSITORIES OF UNITED STATES GOVERNMENT DOCUMENTS.

In accordance with treaty stipulations and under the authority of the congressional resolutions of March 2, 1867, and March 2, 1901, setting apart a certain number of documents for exchange with foreign countries, there are now sent regularly to depositories abroad 55 full sets of United States official publications and 33 partial sets.

While the Statutes at Large have for some years formed part of the sets of government documents provided for international exchange purposes, the Session Laws have only been added during the past year. This addition was made through the efforts of the Library of Congress, a request for the laws having been received from one of the depositories.

The recipients of full and partial sets are as follows:

DEPOSITORIES OF FULL SETS.

Argentina: Ministerio de Relaciones Exteriores, Buenos Aires.
Argentina: Biblioteca de la Universidad Nacional de La Plata.
Australia: Library of the Commonwealth Parliament, Melbourne.
Austria: K. K. Statistische Central-Commission, Vienna.
Baden: Universitäts-Bibliothek, Freiburg.
Bavaria: Königliche Hof- und Staats-Bibliothek, Munich.
Belgium: Bibliothèque Royale, Brussels.
Brazil: Bibliotheca Nacional, Rio de Janeiro.
Canada: Parliamentary Library, Ottawa.
Cape Colony: Government Stationery Department, Cape Town.
Chile: Biblioteca del Congreso Nacional, Santiago.
China: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
Colombia: Biblioteca Nacional, Bogota.
Costa Rica: Oficina de Depósito y Canje de Publicaciones, San José.
Cuba: Department of State, Habana.
Denmark: Kongelige Bibliotheket, Copenhagen.
England: British Museum, London.
England: London School of Economics and Political Science, London.
France: Bibliothèque Nationale, Paris.
France: Préfecture de la Seine, Paris.
Germany: Deutsche Reichstags-Bibliothek, Berlin.
Greece: Bibliothèque Nationale, Athens.
Haiti: Secrétairerie d'État des Relations Extérieures, Port au Prince.
Hungary: Hungarian House of Delegates, Budapest.
India: Home Department, Government of India, Calcutta.
Ireland: National Library of Ireland, Dublin.
Italy: Biblioteca Nazionale Vittorio Emanuele, Rome.
Japan: Department of Foreign Affairs, Tokyo.
Manitoba: Provincial Library, Winnipeg.
Mexico: Instituto Bibliográfico, Biblioteca Nacional, Mexico.
Netherlands: Library of the States General, The Hague.
New South Wales: Board for International Exchanges, Sydney.

New Zealand: General Assembly Library, Wellington.
Norway: Storthingets Bibliothek, Christiania.
Ontario: Legislative Library, Toronto.
Peru: Biblioteca Nacional, Lima.
Portugal: Bibliotheca Nacional, Lisbon.
Prussia: Königliche Bibliothek, Berlin.
Quebec: Legislative Library, Quebec.
Queensland: Parliamentary Library, Brisbane.
Russia: Imperial Public Library, St. Petersburg.
Saxony: Königliche Oeffentliche Bibliothek, Dresden.
Servia: Ministère des Affaires Etrangères, Belgrade.
South Australia: Parliamentary Library, Adelaide.
Spain: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
Sweden: Kungliga Biblioteket, Stockholm.
Switzerland: Bibliothèque Fédérale, Berne.
Tasmania: Parliamentary Library, Hobart.
Transvaal: Government Library, Pretoria.
Turkey: Department of Public Instruction, Constantinople.
Uruguay: Oficina de Depósito, Reparto y Canje Internacional de Publicaciones, Montevideo.
Venezuela: Biblioteca Nacional, Carácas.
Victoria: Public Library, Melbourne.
Western Australia: Public Library of Western Australia, Perth.
Württemberg: Königliche Landesbibliothek, Stuttgart.

DEPOSITORIES OF PARTIAL SETS.

Alberta: Legislative Library, Edmonton.
Alsace-Lorraine: K. Ministerium für Elsass-Lothringen, Strassburg.
Bolivia: Ministerio de Colonización y Agricultura, La Paz.
British Columbia: Legislative Library, Victoria.
Bremen: Senatskommission für Reichs- und Auswärtige Angelegenheiten.
Bulgaria: Minister of Foreign Affairs, Sofia.
Ceylon: United States Consul, Colombo.
Ecuador: Biblioteca Nacional, Quito.
Egypt: Bibliothèque Khédiviale, Cairo.
Guatemala: Secretary of the Government, Guatemala.
Hamburg: Senatskommission für die Reichs- und Auswärtigen Angelegenheiten.
Hesse: Grossherzogliche Hof-Bibliothek, Darmstadt.
Honduras: Secretary of the Government, Tegucigalpa.
Jamaica: Colonial Secretary, Kingston.
Liberia: Department of State, Monrovia.
Lourenço Marquez: Government Library, Lourenço Marquez.
Malta: Lieutenant-Governor, Valetta.
Montenegro: Ministère Princier des Affaires Étrangères, Cetinje.
Natal: Colonial Governor, Pietermaritzburg.
Newfoundland: Colonial Secretary, St. Johns.
New Brunswick: Legislative Library, St. John.
Nicaragua: Superintendente de Archivos Nacionales, Managua.
Northwest Territories: Government Library, Regina.
Nova Scotia: Provincial Secretary of Nova Scotia, Halifax.
Orange River Colony: Government Library, Bloemfontein.
Panama: Secretaria de Relaciones Exteriores, Panama.
Prince Edward Island: Legislative Library, Charlottetown.

Paraguay: Oficina General de Informaciones y Canjes y Commisaria General de Inmigracion, Asuncion.
Roumania: Academia Romana, Bucarest.
Salvador: Ministerio de Relaciones Exteriores, San Salvador.
Straits Settlements: Colonial Secretary, Singapore.
Siam: Department of Foreign Affairs, Bangkok.
Vienna: Bürgermeister der Haupt- und Residenz-Stadt.

CORRESPONDENTS.

The names of new correspondents in every part of the world are constantly being added to the exchange list, so that they now reach a total of 63,605, an increase of 975 over those of the preceding year. These correspondents are subdivided as follows:

Foreign institutions	3,925
Foreign individuals	8,300
Domestic institutions	16,700
Domestic individuals	34,780

A table showing the number of correspondents in each country at the close of 1907 will be found in the report for that year.

RULES GOVERNING THE TRANSMISSION OF EXCHANGES.

The circular containing the rules governing the transmission of exchanges has been revised during the year, and under date of June 30, 1910, a new edition was published. The circular is here reproduced for the information of those who may wish to make use of the facilities of the service in the forwarding of exchanges:

In effecting the distribution of its first publications abroad the Smithsonian Institution established relations with certain foreign scientific societies and libraries by means of which it was enabled to materially assist institutions and individuals of this country in the transmission of their publications abroad and also foreign societies and individuals in distributing their publications in the United States.

In recent years the Smithsonian Institution has been charged with the duty of conducting the official exchange bureau of the United States Government, through which the publications authorized by Congress are exchanged for those of other governments; and by a formal treaty it acts as intermediary between the learned bodies and literary and scientific societies of the contracting states for the reception and transmission of their publications.

Attention is called to the fact that this is an international and not a domestic exchange service, and that it is used to facilitate exchanges between the United States and other countries only. As exchanges from domestic sources for addresses in Hawaii, the Philippine Islands, Porto Rico, and other territory subject to the jurisdiction of the United States do not come within the designation "international," they are not accepted for transmission.

Packages prepared in accordance with the rules enumerated below will be received by the Smithsonian Institution from persons or institutions of learning in the United States and forwarded to their destinations through its own agents or through the various exchange bureaus in other countries. The Smithsonian agents and these bureaus will likewise receive from correspondents in their countries such publications for addresses in the United States and territory subject to its jurisdiction as may be delivered to them under rules similar to those prescribed herein, and will forward them to Washington, after which the Institution will undertake their distribution.

On the receipt of a consignment from a domestic source it is assigned a "record number," this number being placed on each package contained in the consignment. A record is then made of the entire list of packages under the sender's name, and the separate packages are entered under the name of the person or office addressed. An account is thus established with every correspondent of the Institution, which shows readily what packages each one has sent or received through the Exchange Service. The books are then packed in boxes with contributions from other senders for the same country, and are forwarded by fast freight to the bureau or agency abroad which has undertaken to distribute exchanges in that country. To Great Britain and Germany, where paid agencies of the Institution are maintained, shipments are made weekly; to all other countries transmissions are made at intervals not exceeding one month.

Consignments from abroad for correspondents in the United States and its possessions are distributed by mail under frank, a record having first been made of the name of the sender and of the address of each package.

The Institution assumes no responsibility in the transmission of packages, but at all times uses its best endeavors to forward promptly to destination exchanges intrusted to its care.

The rules governing the Smithsonian International Exchange Service are as follows:

1. Consignments from correspondents in the United States containing packages for transmission abroad should be addressed "Smithsonian Institution, International Exchanges, Washington, D. C."

2. In forwarding a consignment the sender should address a letter to the Institution, stating by what route it is being shipped, and the number of boxes or parcels of which it is composed.

3. Packages should be legibly addressed, using, when practicable, the language of the country to which they are to be forwarded. In order to avoid any possible dispute as to ownership, names of individuals should be omitted from packages intended for societies and other establishments.

4. Packages should be securely wrapped in stout paper and, when necessary, tied with strong twine.

5. No package to a single address should exceed about one-half of one cubic foot.

6. Letters are not permitted in exchange packages.

7. If donors desire acknowledgments, packages may contain receipt forms to be signed and returned by the establishment or individual addressed; and, should publications be desired in exchange, a request to that effect may be printed on the receipt form or on the package.

8. Exchanges must be delivered to the Smithsonian Institution or its agents with all charges paid.

9. The Institution and its agents will not knowingly receive for any address purchased books; apparatus or instruments of any description, whether purchased or presented; nor specimens of any nature except when permission from the Institution has been obtained, and then only under the following conditions:

(*a*) Specimens in fluid will not be accepted for transmission.

(*b*) Botanical specimens will be transmitted at the rate of 8 cents per pound.

(*c*) All other specimens will be transmitted at the rate of 5 cents per pound.

LIST OF BUREAUS OR AGENCIES THROUGH WHICH EXCHANGES ARE TRANSMITTED.

Following is a list of bureaus or agencies through which the distribution of exchanges is effected. Those in the larger and many in the smaller countries

forward to the Smithsonian Institution in return contributions for distribution in the United States:

Algeria, via France.
Angola, via Portugal.
Argentina: Comisiôn Protectora de Bibliotecas Populares, Calle Peru No. 655, Buenos Aires.
Austria: K. K. Statistische Central-Commission, Vienna.
Azores, via Portugal.
Barbados: Imperial Department of Agriculture, Bridgetown.
Belgium: Service Belge des Échanges Internationaux, Rue du Musée 5, Brussels.
Bermuda. (Sent by mail.)
Bolivia: Oficina Nacional de Estadística, La Paz.
Brazil: Serviço de Permutações Internacionaes, Bibliotheca Nacional, Rio de Janeiro.
British Colonies: Crown Agents for the Colonies, London.[a]
British Guiana: Royal Agricultural and Commercial Society, Georgetown.
British Honduras: Colonial Secretary, Belize.
Bulgaria: Institutions Scientifiques de S. M. le Roi de Bulgarie, Sofia.
Canada. (Sent by mail.)
Canary Islands, via Spain.
Cape Colony: Government Stationery Department, Cape Town.
Chile: Servicio de Canjes Internacionales, Biblioteca Nacional, Santiago.
China: Zi-ka-wei Observatory, Shanghai.
Colombia: Oficina de Canjes Internacionales y Reparto, Biblioteca Nacional, Bogota.
Costa Rica: Oficina de Depósito y Canje de Publicaciones, San José.
Cuba. (Sent by mail.)
Denmark: Kongelige Danske Videnskabernes Selskab, Copenhagen.
Dutch Guiana: Surinaamsche Koloniale Bibliotheek, Paramaribo.
Ecuador: Ministerio de Relaciones Exteriores, Quito.
Egypt: Director-General, Survey Department, Giza (Mudiria).
France: Service Français des Échanges Internationaux, 110 Rue de Grenelle, Paris.
Friendly Islands. (Sent by mail.)
Germany: Karl W. Hiersemann, Königsstrasse 29, Leipzig.
Great Britain and Ireland: Messrs. William Wesley & Son, 28 Essex street, Strand, London.
Greece: Bibliothèque Nationale, Athens.
Greenland, via Denmark.
Guadeloupe, via France.
Guatemala: Instituto Nacional de Varones, Guatemala.
Guinea, via Portugal.
Haiti: Secrétaire d'Etat des Relations Extérieures, Port au Prince.
Honduras: Biblioteca Nacional, Tegucigalpa.
Hungary: Dr. Julius Pikler, Municipal Office of Statistics, City Hall, Budapest.
Iceland, via Denmark.
India: India Store Department, India Office, London.

[a] This method is employed for communicating with several of the British colonies with which no medium is available for forwarding exchanges direct.

Italy: Ufficio degli Scambi Internazionali, Biblioteca Nazionale Vittorio Emanuele, Rome.
Jamaica: Institute of Jamaica, Kingston.
Japan: Department of Foreign Affairs, Tokyo.
Java, via Netherlands.
Korea: His Imperial Japanese Majesty's Residency-General, Seoul.
Liberia: Department of State, Monrovia.
Lourenço Marquez: Government Library, Lourenço Marquez.
Luxemburg, via Germany.
Madagascar, via France.
Madeira, via Portugal.
Mexico. (Sent by mail.)
Montenegro: Ministère Princier des Affaires Étrangères, Cetinje.
Mozambique, via Portugal.
Natal: Agent-General for Natal, London.
Netherlands: Bureau Scientifique Central Néerlandais. Bibliothèque de l'Université, Leyden.
Newfoundland. (Sent by mail.)
New Guinea, via Netherlands.
New Hebrides. (Sent by mail.)
New South Wales: Board for International Exchanges. Public Library, Sydney.
New Zealand: Dominion Museum, Wellington.
Nicaragua: Ministerio de Relaciones Exteriores, Managua.
Norway: Kongelige Norske Frederiks Universitet Bibliotheket. Christiania.
Panama: Secretaria de Relaciones Exteriores, Panama.
Paraguay: Ministerio de Relaciones Exteriores, Asuncion.
Persia: Board of Foreign Missions of the Presbyterian Church, New York City.
Peru: Oficina de Reparto. Depósito y Canje Internacional de Publicaciones. Ministerio de Fomento, Lima.
Portugal: Serviço de Permutações Internacionaes, Bibliotheca Nacional, Lisbon.
Queensland: Board of Exchanges of International Publications, Parliament House, Brisbane.
Roumania, via Germany.
Russia: Commission Russe des Echanges Internationaux, Bibliothèque Impériale Publique, St. Petersburg.
Saint Christopher. (Sent by mail.)
Salvador: Ministerio de Relaciones Exteriores, San Salvador.
Santo Domingo. (Sent by mail.)
Servia: Section Administrative du Ministère des Affaires Etrangères, Belgrade.
Siam: Department of Foreign Affairs, Bangkok.
South Australia: Public Library of South Australia, Adelaide.
Spain: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
Sumatra, via Netherlands.
Sweden: Kongliga Svenska Vetenskaps Akademien, Stockholm.
Switzerland: Service des Echanges Internationaux, Bibliothèque Fédérale Centrale, Bern.
Syria: Board of Foreign Missions of the Presbyterian Church, New York.
Tasmania: Royal Society of Tasmania, Hobart.
Transvaal: Government Library, Pretoria.
Trinidad: Victoria Institute, Port of Spain.
Tunis, via France.
Turkey: American Board of Commissioners for Foreign Missions, Boston.

Uruguay: Oficina de Depósito, Reparto y Canje Internacional, Montevideo.
Venezuela: Biblioteca Nacional, Caracas.
Victoria: Public Library of Victoria, Melbourne.
Western Australia: Public Library of Western Australia, Perth.
Zanzibar. (Sent by mail.)

In conclusion, it is my sad duty to record here the death, on January 27, 1910, of Ferdinand V. Berry, Chief Clerk of the International Exchange Service. Mr. Berry was appointed as clerk January 9, 1884, and became chief clerk of the exchanges on July 1, 1907. During the twenty-six years that Mr. Berry served the Institution his work was faithfully and efficiently performed, and his loss is deeply regretted.

Respectfully submitted.

C. W. SHOEMAKER,
Chief Clerk, International Exchange Service.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

Appendix IV.

REPORT ON THE NATIONAL ZOOLOGICAL PARK.

Sir: I have the honor to present herewith a report of the operations of the National Zoological Park for the fiscal year ended June 30, 1910.

The appropriation for that year was $95,000, and the estimated amount for current maintenance was $83,706.92, leaving but $11,293.08 from which to make necessary repairs and extensions of buildings, improvements of roads and grounds, and additions to the collection.

The largest sum expended for any one object was that of $5,291, for the transportation of animals from Africa, a detailed account of which is appended hereto. For the accommodation of these animals alterations and additions were made to the buildings already in use. In the extension to the lion house a number of small and comparatively slight cages were removed and six new and larger ones, strong enough to hold lions and other large cats, were built in. The antelope house was enlarged by an extension 50 by 50 feet, thus furnishing ten additional stalls and a much needed new entrance. The building, although very simple in construction, is now admirably adapted for accommodating visitors, having three entrances with convenient approaches. The new stalls or cages are provided with commodious yards, which were nearly completed at the close of the fiscal year.

The first work of the year was the construction of a suitable pool for sea lions and seals, which was established in the wooded valley occupied by the beaver. This pool is 47 by 96 feet, with a depth of 6 feet 3 inches. It has a shelter house of stone, ample banks, and a level border, the whole inclosed with an iron fence.

Two watchman's houses were placed at the park entrance and a flag pole was erected on the hill south of the lion house.

This was all the new work that it was possible to execute from the limited amount available.

Minor improvements and repairs were made as follows: Concrete steps and walk to the bird house; connecting the culvert in the beaver valley with Rock Creek sewer; painting flying cage; surfacing gravel and cinder walks; making a serviceable road to the coal vault of the central heating plant.

Much of this work it has been possible to carry on economically by the use of stone from a quarry in the park and of sand and gravel from the creek.

The following is a tabular statement of the cost of this work:

Alterations to lion house	$1,100.00
Addition to antelope house, with approach	2,500.00
Sea-lion pond, including stonework, concrete construction, fencing, grading, planting, and walk	2,025.00
Two watch houses ($125 each)	250.00
Flag pole	100.00
Steps and walk to bird house	110.00
Culvert and connection	600.00
Repainting flying cage	425.00
Surfacing walks	600.00
Road to coal vault	125.00

AFRICAN ANIMALS.

While the Smithsonian Expedition was in British East Africa Mr. W. N. McMillan, of Nairobi, presented to the park a collection of East African animals which he had gathered at his place, Juja farm, about 25 miles from Nairobi. The collection included 5 lions, 2 cheetahs, a leopard, a Grant's gazelle, a warthog, and several smaller mammals and birds. It was thought advisable to send the assistant superintendent of the park to Nairobi to attend to the shipping and come through with the animals, on account of the importance and value of this collection, and the fact, stated by the Smithsonian party, that other desirable specimens, already in captivity, could be obtained in the region about Nairobi, and also because of the special precautions which the Agricultural Department required to be taken in order to prevent the introduction of contagious diseases, either through the animals themselves or by means of food or other supplies obtained for them. He left Washington toward the end of July, 1909, and returned with the animals December 17. Shipment from Mombasa was made October 28 by a steamer of the Compagnie des Messageries Maritimes. At Port Said the animals were transferred to a lighter and kept there, without landing, for thirteen days, awaiting the arrival of a steamer going directly to Philadelphia. The voyage from Port Said, by a German freight steamer, occupied twenty-six days, but the weather was unusually favorable. With the exception of a few animals, very recently captured or very young, there was no loss between Nairobi and Philadelphia. The ruminants and warthog were held in quarantine at Philadelphia for about six weeks to allow thorough inspection and inoculation tests to be made to determine whether they carried any communicable disease. It is gratifying that all proved to be free from disease, since the region from which they came can furnish many important animals which are as yet but little represented in zoological collections. Through the kindness of the Philadelphia Zoological Society the animals were kept at their gardens during the time of quarantine. The two cheetahs had died before shipment was made and the male Grant's gazelle had been killed by accident. With these exceptions all of the animals presented by Mr. McMillan reached Washington safely and are still at the park. A pair of eland, a pair of Coke's hartebeest, a waterbuck, a Grant's zebra, and a bateleur eagle, which were purchased, reached Philadelphia in apparently good condition, but the male eland died of impaction of the intestine while in quarantine. A young male eland was presented by Lord Delamere, but, being in poor condition when received, lived only a few days. A pair of Thomson's gazelle and an impala, all very young, and a pair of white-bearded gnu, caught just before shipping, also died very soon.

Mr. G. H. Goldfinch, assistant game ranger of British East Africa, presented a hyrax and two specimens of Lophiomys, a rare and little-known rodent.

The 21 animals which reached the United States included 15 species, of which 13 were species or subspecies not at any time before represented in the collection of the park. The lions are of the subspecies known as "Kilimanjaro lion" (*Felis leo sabakiensis*).

In arranging for transportation it was necessary to go to London and Hamburg, and, taking advantage of the opportunity, brief visits were made to 14 zoological gardens in Europe, and the Giza Garden, near Cairo, was visited on the return.

The expenditures in connection with these animals were:

Freight, hauling, and expenses of transshipping	$2,555
Purchase of animals	728
Cages for shipping	450

Food for animals	$520
Transportation and subsistence of A. B. Baker	730
Help with animals, including services of attendants, gratuities to ship's officers, etc	190
Telegraph and cable messages	43
Miscellaneous	75
Total	5,291

Thirty-four species or subspecies new to the collection were exhibited during the year, including:

Kilimanjaro lion.	Defassa waterbuck.	Cape hyrax.
Clouded leopard.	Grant's gazelle.	Short-tailed eagle.
Indian tapir.	Muntjac.	Warlike crested eagle.
East African eland.	Grant's zebra.	
Coke's hartebeest.	Northern warthog.	

The most important losses were:

Indian tapir.	Dromedary.	2 jabirus.
East African eland.	2 llamas.	Whooping crane.
2 Rocky Mountain sheep.	2 jaguars.	North African ostrich.
3 mule deer.	2 Tasmanian wolves.	
Reindeer.	2 leopards.	

One hundred and sixty-two dead animals were sent to the National Museum.

Autopsies were made by pathologists of the Bureau of Animal Industry on 99 animals, showing causes of death as follows:

Pneumonia	22	Hydrophilosis	2
Tuberculosis	7	Proteusbacillosis	1
Pulmonary congestion	2	Porocephalus infestation	1
Aspergillosis	5	Septicemia	1
Gastro-enteritis	8	Intestinal parasites	1
Enteritis	12	Enterotoxism	1
Gastritis	7	Psoroptic mange	1
Hemorrhagic enteritis	2	Eversion of rectum	1
Nephritis	3	Traumatism	1
Fatty degeneration of liver	1	Malnutrition from faulty teeth	1
Peritonitis	2	Suffocation	1
Metritis	1	Old age	2
Intestinal coccidiosis	5	No cause found	3
Cercomoniasis	5		

VISITORS.

The number of visitors to the park during the year was 721,555, a daily average of 1,977. This number is an increase over the previous year of 156,816, and an increase in the daily average of 430. The largest number in any month was 156,432, in March, 1910, a daily average for the month of 5,046.

During the year there visited the park 155 schools, Sunday schools, classes, etc., with 3,883 pupils, a monthly average of 324 pupils. While most of them were from the city and immediate vicinity, 34 of the schools were from neighboring States, and classes came from Falmouth and Haverhill, Massachusetts; Stafford Springs, Connecticut; Rochester, Dover, Exeter, and Newport, New Hampshire; Bellows Falls, Vermont; and Sanford, Maine.

Statement of the collection.

Accessions during the year:

Presented	87
Received in exchange	8
Purchased	139
Deposited	8
Born and hatched in National Zoological Park	64
Captured in National Zoological Park	1
Total	307

PRESENTED.

Rhesus monkey, Miss Justine Ingersoll, Boston, Mass	2
Common macaque:	
William, F. Wenger, Washington, D. C	1
G. R. Tompkins, Warrenton, Va	1
Bonnet macaque, G. R. Tompkins, Warrenton, Va	1
Baboon, W. N. McMillan, Nairobi, British East Africa	1
White-throated capuchin, Roland Davis, Washington, D. C	1
Lion, W. N. McMillan, Nairobi, British East Africa	5
Leopard, W. N. McMillan, Nairobi, British East Africa	1
Bay lynx, Adams Express Co., Washington, D. C	1
Florida lynx, Howard Elliott, Washington, D. C	1
Coyote, R. P. Neuman, Englewood, Kans	2
Gray fox, J. F. Unverzagt, Washington, D. C	1
American otter, Frederic B. Hyde, Washington, D. C	2
Kinkajou, Surg. W. H. Bell, U. S. Navy, Cristobal, Canal Zone	1
Common skunk, F. C. Duehring, Washington, D. C	1
Cinnamon bear, E. S. Bruce, U. S. Forest Service	1
Virginia deer, Thos. Blagden, Washington, D. C	1
Common goat, John R. McLean, Washington, D. C	4
Grant's gazelle, W. N. McMillan, Nairobi, British East Africa	1
Northern warthog, W. N. McMillan, Nairobi, British East Africa	1
Lophiomys, G. H. Goldfinch, Asst. Game Ranger, Nairobi, British East Africa	1
English rabbit:	
Mrs. Birdsall, Washington, D. C	1
Mrs. Street, Washington, D. C	2
Common opossum:	
Charles L. Medley, Victoria, Mo	1
E. Droop, Washington, D. C	2
The President, Washington, D. C	2
D. L. Coon, Washington, D. C	1
Albino opossum, donor unknown	1
Sparrow hawk, Mrs. C. H. McAndrie, Washington, D. C	1
Sharp-shinned hawk, E. L. Burritt, Washington, D. C	1
Red-shouldered hawk, T. Hanlon, Washington, D. C	1
Bald eagle, Col. R. L. Montague, Washington, D. C	1
Warlike crested eagle, W. N. McMillan, Nairobi, British East Africa	1
Hawk, W. N. McMillan, Nairobi, British East Africa	1
Egyptian vulture, W. N. McMillan, Nairobi, British East Africa	1
Pileated vulture, W. N. McMillan, Nairobi, British East Africa	1
Great horned owl:	
John Ricketts, Flinton, Pa	1
Donor unknown	1

Barn owl:
R. H. Chappell, Washington, D. C---- 1
Dr. C. N. Lenman, Washington, D. C---- 1
Screech owl:
Raymond Campbell, Washington, D. C---- 1
Mrs. Arthur Lee, Washintgon, D. C---- 1
Red and yellow and blue macaw, D. S. Sheahan, Washington, D. C---- 1
Red-shouldered Amazon, Mrs. Bicknell, Washington, D. C---- 1
Yellow-fronted Amazon, B. Munoz, Honduras---- 1
Parrakeet:
Mrs. Leigh Hunt, Bethesda, Md---- 2
M. B. Tubman, Washington, D. C---- 1
Common canary:
M. Doumer, Washington, D. C---- 1
Mrs. H. C. Steuart, Washington, D. C---- 1
Cutler Vickery, Washington, D. C---- 1
Java sparrow, Miss M. Britton, Washington, D. C---- 4
Jungle fowl, Dr. C. B. Davenport, Cold Spring Harbor, N. Y---- 2
Wood ibis, A. M. Nicholson, Orlando, Fla---- 2
Whistling swan, Mrs. Fitzgerald, Washington, D. C---- 1
Brant, Dr. H. L. Gosling, Washington, D. C---- 1
Alligator:
Mark Sloane, Washington, D. C---- 1
Miss C. Harndon, Washington, D. C---- 1
Dr. W. S. Harban, Washington, D. C---- 1
DeF. Larner, Washington, D. C---- 1
Edgar Shreve, Washington, D. C---- 1
Mrs. Mary Bartlett, West Milford, W. Va---- 2
Gila monster, Gustav Friebus, Washington, D. C---- 1
Rattlesnake, G. H. White, Washington, D. C---- 1
Black snake:
W. V. Cox, Washington, D. C---- 1
Thos. C. Johnson, Deanwood, D. C---- 1
House snake, Thos. C. Johnson, Deanwood, D. C---- 1
Garter snake, H. F. Carl, Washington, D. C---- 1

SUMMARY.

Animals on hand July 1, 1909	1,416
Accessions during the year	307
Total	1,723
Deduct loss (by exchange, death, and returning of animals)	299
On hand June 30, 1910	1,424

	Species.	Individuals.
Mammals	153	625
Birds	184	692
Reptiles	35	107
Total	372	1,424

Respectfully submitted.

FRANK BAKER,
Superintendent.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

Appendix V.

REPORT ON THE ASTROPHYSICAL OBSERVATORY.

Sir: I have the honor to present the following report on the operations of the Smithsonian Astrophysical Observatory for the year ending June 30, 1910:

EQUIPMENT.

The equipment of the observatory is as follows:

(*a*) At Washington, in an inclosure of about 16,000 square feet, are contained five small frame buildings used for observing and computing purposes, three movable frame shelters covering several out-of-door pieces of apparatus, and also one small brick building containing a storage battery and electrical distribution apparatus.

(*b*) At Mount Wilson, California, upon a leased plot of ground 100 feet square in horizontal projection, are located a one-story cement observing structure, designed especially for solar constant measurements, and also a little frame cottage, 21 feet by 25 feet, built and furnished last September for observer's quarters. It is highly satisfactory to note from the decrease in probable error of the observations secured in 1909 on Mount Wilson, compared with those of previous years, that the new cement observatory there, located as it is far from the dust, smoke, and disturbances of the other parts of the mountain, is excellently adapted for securing the most exact results.

WORK OF THE YEAR.

The present year's results are of uncommon interest, for they appear to fix within narrow limits the value of the solar constant of radiation. When in 1902 the first attempts were made here to measure it, that first-rank constant of nature, the intensity of the solar radiation at the earth's mean distance from the sun, was unknown within the wide range between 1.75 and 4 calories per square centimeter per minute. This range of values is given, with a preference for Langley's value (3 calories), by Hann in his standard work on meteorology, published in 1905.

It is improbable that this observatory would have continued since 1902 in solar-constant work had it not been that the results of 1903 gave strong indications of considerable variability of the sun in short intervals and that later work also strongly supported this presumption. The late director, Secretary Langley, shared, with many others of the most competent judges on the subject, the impression that to determine the solar constant of radiation with any considerable degree of accuracy or certainty was, if not impossible, yet a thing which would probably be long deferred and would involve spectro-bolometric measurements at the highest possible altitudes at which men may exist. He did not at all believe that our results of 1903 approximated to the true value of the solar constant, but only that they might be so far independent of ordinary atmospheric changes as to be used in determining the probability of solar variability. Hence, in 1905, he instructed the present writer to bear in mind, in going to Mount Wilson for the first time, that it was not the solar constant but

the possibility of solar variability which was the result to be determined by the expedition. This inquiry has, indeed, been the primary one in all the subsequent work, but not to the exclusion of attempts to fix the value of the solar constant itself.

There were at that time two principal and seemingly formidable difficulties hindering the determination of the solar constant of radiation. First, there was no instrument capable of absorbing fully and adapted for measuring completely the energy received at the earth's surface, excepting, perhaps, the little-known and rarely used instrument invented by W. A. Michelson, of Russia, about 1894. Second, there was grave doubt if a true estimate of the loss of radiation in traversing the air could be made. Langley has somewhere described the first obstacle as "formidable," the second as "perhaps insurmountable."

As stated in previous reports, much attention was given from 1903 onward to devising a standard pyrheliometer, and thus establishing the absolute scale of radiation measurements. A considerable degree of success seemed to be attained in 1906, but the results obtained in that year were found, by comparison with instruments of the United States Weather Bureau, to differ so much from the generally adopted scale of Ångström that further work, involving finally the construction of two additional water-flow pyrheliometers, was done. The last of these instruments, and by far the most perfect of them all, was completed and tried at Mount Wilson in October, 1909. A fairly close agreement seemed to hold between it and its immediate predecessor, but when the electrical constants of both instruments were determined with extreme care in February, at Washington, by Mr. Aldrich, the gap widened. A source of error, till then little regarded, was reconsidered, and painstaking comparisons of pyrheliometers were carried through at Washington by Messrs. Aldrich, Abbot, and Fowle. These were finished in June, 1910, and the two standard pyrheliometers were found to agree together well within the probable error of the highly accurate experiments. Not only so, but each instrument was found to take up and measure between 99 and 100 per cent of such various quantities of electrically introduced heat as were used as tests. Finally these definite measurements indicated that while the results published at page 46 in volume 2 of the Annals, made with standard pyrheliometer No. 1, are 4 or 5 per cent above the true scale, yet when all the experiments made with that instrument, at Washington as well as Mount Wilson, are collected their mean result is almost in exact agreement with the results obtained in 1910 with standard pyrheliometers Nos. 2 and 3.

It may now be accepted that the absolute scale of radiation is established within three parts in 1,000, and that we may express all our measurements of solar radiation made since 1902 with this degree of accuracy in absolute calories per square centimeter per minute.

Three secondary pyrheliometers, the cost of whose construction after my designs has been defrayed from the Hodgkins Fund, have been standardized and sent to Russia, France, and Italy. Two others have been sold by the Institution to the United States Agricultural Department. Thus steps are being taken to diffuse the standard scale of pyrheliometry. The new scale is about 5.2 per cent above that of new Ångström pyrheliometers.

The second obstacle mentioned above seems now less serious than the first. It was found in 1905 and 1906 that practically identical values of the solar constant resulted from good series of spectro-bolometric observations of the same day taken at Washington (sea level) and Mount Wilson (6,000 feet elevation). But in August, 1909, Mr. Abbot ascended Mount Whitney (14,500 feet) with a complete spectro-bolometric outfit, and, notwithstanding many days of

unpromising weather, succeeded on September 3, under the most perfect sky and in exceptionally dry air, in making a complete and satisfactory series of solar constant measurements. A prism of quartz and two mirrors of magnalium were the only optical parts to affect the rays, so that it was possible to observe from wave length 0.29 μ to wave length 3.0 μ. This extended region includes not only all the visible but the ultra-violet and infra-red spectra, with sufficient completeness to include in the discussion apparently within 1 per cent of all the rays which the sun sends the earth and to make the allowance for rays not observed practically sure. During the same day Mr. Ingersoll observed with the usual complete spectro-bolometric outfit on Mount Wilson, and his results were in accord with what would be expected from his preceding and following day's work there and agreed within 1 per cent with those obtained simultaneously on Mount Whitney.

In view of the agreement of results on the solar constant of radiation obtained at sea level, 1 mile, and 2¾ miles elevation, it now seems highly probable that we can really by Langley's method of homogeneous rays allow for losses in the air and get the same values that we would observe directly if we could take our instruments above the air altogether.

The reduction of spectro-bolographic work to the absolute scale of pyrheliometry enables us to give as the average value of the solar constant of radiation for the epoch 1905 to 1909, 1.924 calories per square centimeter per minute. It is probable that observations at sun-spot minimum will tend to raise this value by rather more than 1 per cent, so that we may suppose the mean value of the solar constant for a complete sun-spot cycle will be about 1.95 calories.

Experiments made in 1909 at Mount Wilson with various optical systems agree within their probable error with one another, and with the results obtained on Mount Whitney in fixing the distribution of energy in the spectrum of the sun outside the atmosphere. In the Mount Whitney work the curve of energy distribution was followed to a wave-length estimated (not very accurately) as 0.29μ and it there practically reached zero intensity, although the quartz and magnalium apparatus would have been capable of transmitting the rays, had they existed, of much shorter wave-lengths. In the spectrum of the "perfect radiator," corresponding to the apparent temperature of the sun, the intensity of the ultra-violet rays would be of some importance for a considerably farther stretch of wave-lengths beyond this. It therefore appears that either the earth's atmosphere, even above Mount Whitney, or else the sun's envelope, effectually hinders the solar rays. If it is the former, then it may be that the above-mentioned value of the solar constant should still be raised a few per cent. But the known powerful selective absorption of vapors in the sun's envelope seems quite reasonably competent alone to produce the observed weakness of the solar spectrum in the ultra-violet. This view is confirmed by experiments of Miethe and Lehmann, who found no extension of the solar spectrum with increasing elevation, although they shifted their observing station from Berlin (50 meters) to Monte Rosa (3,500 meters), thus greatly diminishing the layer of air traversed. Their shortest wave-length was 0.2911μ, closely agreeing with ours.

From our experiments of 1909 the apparent average solar temperature is 6430°, 5840°, or 6200°of the absolute, according as we follow Wien's displacement law, Stefan's law, or Planck's law as the method of computation. But the temperature of the sun, apart from the uncertainty of terms when dealing with such high values, is probably a quantity which has very various values, from the center to the limb of the sun's disk, depending on the depth within the sun at which the radiation originates.

At Washington Messrs. Fowle and Aldrich have continued experiments on the transmission by moist columns of air for long-wave radiation, though with

many interruptions due to the difficulty of the research. The work has been carried to wave-length beyond 15μ in the infra-red, and for columns of air 800 feet long. It is not yet possible to summarize the results.

Messrs. Fowle and Aldrich and Miss Graves have made rapid progress with the reduction of solar-constant work of 1909.

Experiments have been begun for the purpose of devising economical means of utilizing solar energy for domestic purposes.

PERSONNEL.

Dr. L. R. Ingersoll served as temporary bolometric assistant on Mount Wilson to September 6, 1909.

Mr. L. B. Aldrich was given a temporary appointment as bolometric assistant at Washington beginning September 1, 1909. He passed a competitive examination and was reappointed provisionally on January 10, 1910. His appointment was made permanent, to begin July 1, 1910.

SUMMARY.

The work of the year is notable for the determination of the absolute scale of pyrheliometry and for the success of spectrobolometric observations of the solar constant of radiation on Mount Whitney. These agree with simultaneous observations of the same kind on Mount Wilson. Reducing these and other results to the absolute scale of pyrheliometry, we may fix the average value of the solar constant of radiation at 1.925 calories per square centimeter per minute for the epoch 1905–1909. Making allowance for the higher values which must prevail at sun-spot minimum, the solar constant may be estimated at 1.95 calories as an average value for a sun-spot cycle. No reason has been found for departing from the view heretofore held that short-interval variations of 5 per cent or more from this value occur. The energy distribution in the solar spectrum outside the atmosphere has been determined with the bolometer on Mount Whitney between wave lengths 0.29μ in the ultra violet and 3.0μ in the infra red. This region appears to contain full 99 per cent of all the solar energy outside the atmosphere. The apparent temperature of the sun as computed by three different methods comes out 6430°, 5840°, and 6200° of the absolute scale. Researches on the transmission of moist columns of air for long-wave rays, such as the earth emits, have been continued to wave lengths beyond 15μ, and for columns of air 800 feet in length. Secondary pyrheliometers, standardized to the absolute scale, have been sent to Russia, France, and Italy, and also furnished to the United States Weather Bureau and Department of Agriculture.

Respectfully submitted.

C. G. ABBOT, *Director.*

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

Appendix VI.

REPORT ON THE LIBRARY.

Sir: I have the honor to present the following report on the operations of the library of the Smithsonian Institution for the fiscal year ending June 30, 1910:

The accessions recorded for the Smithsonian deposit, Library of Congress, numbered 2,653 volumes, 2,879 parts of volumes, 1,396 pamphlets, and 623 charts, making a total of 7,551 publications. The accession numbers run from 495,195 to 500,000. These publications were forwarded to the Library of Congress immediately upon their receipt and entry. In their transmission 270 boxes were required, containing approximately the equivalent of 10,800 volumes. The actual number of pieces sent, including parts of periodicals, pamphlets, and volumes, numbered 36,526. This statement does not, however, include about 2,948 parts of serial publications secured in exchange to complete sets and transmitted separately.

The Institution has continued the policy of sending public documents presented to it to the Library of Congress without stamping or entering. The number of publications given above does not include these, nor does it include other publications for the Library of Congress received through the International Exchange Service.

The libraries of the Smithsonian office, of the Astrophysical Observatory, and the National Zoological Park have received 473 volumes and pamphlets and 253 parts of volumes and charts, making a total of 626 publications, and a grand total, including the publications for the Smithsonian deposit, of 8,177. The actual decrease in the number of publications entered for the Smithsonian library is not as great as would at first appear, owing to the fact that in the present report a statement has been made of the number of completed volumes accessioned, rather than, as was formerly the custom, of the number of parts constituting a volume. Special attention has been given to the checking up and completing of the Smithsonian deposit sets of publications of scientific societies and learned institutions of the world, together with the series of scientific periodicals contained in the library.

The parts of serial publications entered on the card catalogue numbered 26,772, and 1,605 slips for completed volumes were made; 277 cards for new periodicals and annuals, together with 418 donor cards and 1,114 catalogue cards for separate publications were made and filed.

Inaugural dissertations and academic publications were received and accessioned from universities at the following places:

Basel.	Halle an der Saale.	St. Petersburg.
Berkeley.	Leipzig.	Utrecht.
Berlin.	Liege.	Vienna.
Breslau.	Lund.	Würzburg.
Graz.	Paris.	

The establishing of new exchanges and the securing of missing parts to complete sets of publications in the Smithsonian library required the writing of

3,251 letters, resulting in the addition of about 277 periodicals and in the receipt of about 2,948 missing parts.

The library has again cooperated with the International Exchanges in sending to foreign countries lists of government documents and serial publications of that class needed to complete the sets in the Library of Congress. In addition to the countries already enumerated in previous reports, lists have been sent to Natal, New Zealand, Spain, and Venezuela.

The publications in the reading room being in the main of a class not to be found elsewhere, a yearly increase is to be noted in the number of persons consulting them. The readers include scientific workers not only from Washington, but from other American and foreign cities. The staff has withdrawn for office use 52 bound volumes of periodicals and 3,336 parts of scientific periodicals and popular magazines. In addition, the various bureaus of the Government continue to avail themselves of the opportunity to use these publications as well as those in the sectional libraries of the institution.

The mail receipts numbered 43,222 packages, and 7,117 packages were received through the International Exchange Service. The publications contained therein were stamped and distributed for entry from the mail desk. About 5,111 acknowledgments were made on the regular forms in addition to the letters which were written in acknowledgment of publications received in response to the requests of the institution for exchange.

The employees' library.—The books added to this library by purchase numbered 30, and by binding 300 volumes of periodicals were made available for circulation. The total number of books borrowed was 2,092. The sending of a selected number of books from this library to the National Zoological Park has been continued, but the sending of books to the Bureau of American Ethnology was discontinued when the Bureau moved into the Smithsonian building in January, 1910.

Bibliography of aeronautics.—The manuscript for the Bibliography of Aeronautical Literature to July 1, 1909, was completed during the summer of that year, and the work, forming volume 55 of the Smithsonian Miscellaneous Collections, was published during the month of April, 1910. Numerous accessions have been made to the collection of aeronautical literature in the office library. The volumes have been bound and are now available for reference.

At the request of the American committee on cooperation with the International Congress of Archivists and Librarians, the assistant librarian prepared an answer to the question "Dans quel sens y a-t-il lieu de réorganiser et d'étendre le service des échanges internationaux?" The reply was sent in the latter part of January for presentation to the congress convening in Brussels August 27 to 31.

American Historical Association.—The arranging of new exchanges of the annual reports of the American Historical Association from the allotment agreed upon for that purpose has resulted in a number of publications of historical societies throughout the world being added to the Smithsonian deposit at the Library of Congress.

UNITED STATES NATIONAL MUSEUM.

The library of the Museum has suffered from congestion and is handicapped in its work by lack of space. While it has continued to grow during the last ten years, no additional room has been available owing to the overcrowded condition of the Museum building. As the new building is now ready for the collections it will be possible in the near future for the library to have all the room necessary for expansion and proper classification. Many gifts of importance have been received, those deserving special mention being the publications presented

by Dr. Theodore N. Gill, Dr. Charles W. Richmond, Dr. Charles A. White, Dr. E. A. Schwartz, Dr. O. P. Hay, and Dr. Marcus Benjamin. The publications are scientific and of value in completing sets and filling in of the series of authors' separates.

In the death of Dr. Charles A. White the Museum library has lost one of its valued benefactors. Doctor White was at all times ready to forward the interests of the Museum library and gave material assistance in the work of completing its series of authors' separates and its sets of periodical publications. His gifts have been numerous and are of special value along the lines of the work upon which he was engaged.

Lists of the publications in the sectional libraries of the Museum have been made, and an experienced cataloguer has been checking them up with the publications on the shelves in the sections. The work of checking is uncompleted at the close of the fiscal year, but will be continued.

In the Museum library there are now 38,300 volumes, 61,858 unbound papers, and 110 manuscripts. The accessions during the year consisted of 2,056 books, 5,541 pamphlets, and 307 parts of volumes; 1,001 books, 1,055 complete volumes of periodicals, and 6,294 pamphlets were catalogued.

Attention has been given to the preparation of volumes for binding, with the result that 435 books were sent to the government bindery.

The number of books, periodicals, and pamphlets borrowed from the general library amounted to 23,272, including 4,148 from the collections which were assigned to the sectional libraries.

The sectional libraries established in the Museum have remained unchanged, the complete list now standing as follows:

Administration.	Geology.	Mollusks.
Administrative assistant.	History.	Oriental archæology.
Anthropology.	Insects.	Paleobotany.
Biology.	Invertebrate paleontology.	Parasites.
Birds.	Mammals.	Physical anthropology.
Botany.	Marine invertebrates.	Prehistoric archæology.
Comparative anatomy.	Materia medica.	Reptiles.
Editor.	Mesozoic fossils.	Superintendent.
Ethnology.	Mineralogy.	Taxidermy.
Fishes.		Technology.

SUMMARY OF ACCESSIONS.

The following table summarizes all the accessions during the year except for the Bureau of American Ethnology, which is separately administered:

Smithsonian deposit in the Library of Congress, including parts to complete sets	10,499
Office, Astrophysical Observatory, National Zoological Park, and International Exchanges	626
United States National Museum Library	7,904
Total	19,029

Respectfully submitted.

PAUL BROCKETT, *Assistant Librarian.*

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

Appendix VII.

REPORT ON THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

Sir: I have the honor to submit the following report on the operations of the United States Bureau of the International Catalogue of Scientific Literature for the year ending June 30, 1910.

The International Catalogue of Scientific Literature is an international cooperative enterprise having at present 32 regional bureaus scattered throughout the world, supported by the countries taking part in the work. The duties of these regional bureaus are to collect, index, and classify all contributions to pure science published within the several countries they represent. The material thus prepared is forwarded to the Central Bureau in London, there to be assembled and published.

The catalogue consists of 17 annual volumes, one for each of the following sciences: Mathematics, mechanics, physics, chemistry, astronomy, meteorology, mineralogy, geology, geography, paleontology, general biology, botany, zoology, anatomy, anthropology, physiology, and bacteriology.

The Central Bureau is maintained entirely by the funds received from the subscribers to the catalogue. The regional bureaus are in every case supported by the countries taking part in the enterprise, in the great majority of cases by direct governmental grants.

Since the beginning of the undertaking in 1901 the annual volumes have increased in size to such an extent that the cost of publication at one time exceeded the sum received from subscriptions, and it was necessary to curtail somewhat not only the methods of classifying the various subjects, but also the citation methods used in the subject catalogues. This is now being done without detracting in any way from the value of the catalogue as a work of reference, although the labor of preparation is in most cases much greater.

The allotment for the present fiscal year was $6,000. Five persons are regularly engaged in the Bureau, and occasionally, when funds permit, the assistance of a specialist in some one of the sciences is temporarily employed.

There were 25,082 cards sent from this Bureau during the year as follows:

Literature of 1901	72
Literature of 1902	173
Literature of 1903	248
Literature of 1904	465
Literature of 1905	1,163
Literature of 1906	1,502
Literature of 1907	3,160
Literature of 1908	6,305
Literature of 1909	11,994
Total	25,082

This number does not represent the actual number of citations sent, for on account of a new ruling of the Central Bureau some of the biological cards contained a number of citations each. However, the actual number of cita-

tions has been reduced to approximately 28,000 for the year, which is about 6,000 less than was sent in for the previous year. This decrease is not entirely due to the new methods of classifying, for as the work is each year being brought more nearly up to date fewer old papers are indexed, consequently fewer citations are required. It is estimated that when the work is entirely up to date only about 25,000 citations will be needed to completely index the yearly scientific literature of the United States.

The following-named volumes of the catalogue were received and delivered to the subscribers in this country:

Seventh annual issue: Meteorology, General Biology, Botany, Anatomy, Anthropology, and Bacteriology.

Eighth annual issue: Mathematics, Mechanics, Astronomy, Mineralogy, and Zoology.

For a number of years it has been the aim to eventually prepare this catalogue not only through the cooperation of the various countries, but through direct cooperation of authors and publishers of the papers indexed. This method was actually tried during the present year in the preparation of the volume on zoology, and though it required writing about 517 letters, the result was so satisfactory that it is proposed to gradually extend the method to other sciences.

As has been pointed out before, the London Central Bureau is maintained solely by means of the funds obtained from subscriptions to the catalogue, and the necessary cost of editing and printing is so great that $85 per year has to be charged for the complete set of 17 volumes. This large figure places the work beyond the reach of many who would undoubtedly purchase individual volumes, if not the complete sets. The cost of doubling the edition of the catalogue would be comparatively small, the outlay representing only the cost of press work and paper, and it is felt that if the edition could be doubled and the price reduced one-half, the work could be placed at once within the reach of many small libraries and scientific workers who need such works of reference.

At present the available funds prevent any such course being adopted, but a comparatively small endowment would not only render this move possible, but would enable the present restricted scope of the catalogue to be extended to include at first the applied sciences and then gradually the other records of human progress. A yearly income of $5,000 or $6,000 from a permanent endowment would enable the central bureau to take the necessary steps to first increase the circulation and then broaden the scope of the catalogue, and it is earnestly hoped that in the near future such an endowment may be obtained.

There have been no losses of property during the year, excepting those caused by ordinary wear and deterioration.

In the sundry civil bill approved June 25, 1910, $7,500 was appropriated to carry on the work for the fiscal year ending June 30, 1911. This sum is an increase of $1,500 over the appropriation of the present year.

Respectfully submitted.

LEONARD C. GUNNELL,
Chief Assistant.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

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Appendix VIII.

REPORT ON THE PUBLICATIONS.

Sir: I have the honor to submit the following report on the publications of the Smithsonian Institution and its branches during the fiscal year ending June 30, 1910:

There was distributed a total of 801 volumes and separates in the series of Smithsonian Contributions to Knowledge, 17,560 in the series of Smithsonian Miscellaneous Collections, 28,879 in the series of Smithsonian Annual Reports, and 2,179 in the series of Special Publications. In addition, there were 959 publications not included in the Smithsonian series distributed by the Institution, and 5,274 publications of the Bureau of American Ethnology sent out during the six months from January 1 to June 30, 1910. This makes a grand total of 55,652, an increase of 11,489 over the previous year.

I. SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE.

No memoirs of the series of Smithsonian Contributions to Knowledge were issued during the year, although progress was made in preparing for press the Langley Memoir on Mechanical Flight which was begun by the late Secretary Langley in 1904 and continued by Mr. Charles M. Manly, assistant in charge of experiments.

II. SMITHSONIAN MISCELLANEOUS COLLECTIONS.

In the series of Smithsonian Miscellaneous Collections there were published during the year (1) fifteen papers in the Quarterly Issue, which was discontinued December 31, 1909, completing volume 52 of the regular series; (2) one paper in volume 51; (3) seven papers in volume 54, completing that volume; (4) volume 55, Bibliography of Aeronautics; (5) and seven papers in volume 56. The Quarterly Issue papers were as follows:

1872. Smithsonian Miscellaneous Collections. Volume 52, part 4 (Quarterly Issue, vol. 5, part 4) containing Publications, 1873 to 1887. Published January 20, 1910. Octavo. Pages viii, 403–514, with plates 38 to 66. (The Quarterly Issue ends with this volume.)

1873. Prehistoric Ruins of the Gila Valley. By J. Walter Fewkes. Published August 4, 1909. Octavo. Pages 403 to 436, with Plates 38 to 42.

1874. Description of a New Frog from the Philippine Islands. By Leonhard Stejneger, Curator, Division of Reptiles and Batrachians, U. S. National Museum. Published August 4, 1909. Octavo. Pages 437–439.

1875. A New Genus of Fossil Cetaceans from Santa Cruz Territory, Patagonia; and Description of a Mandible and Vertebræ of Prosqualodon. By Frederick W. True, Head Curator of Biology, U. S. National Museum. Published August 7, 1909. Octavo. Pages 441–456, with Plates 43 to 45.

1876. Notes on Certain Features of the Life of the Alaskan Freshwater Sculpin. By Barton A. Bean and Alfred C. Weed, of the Division of Fishes, U. S. National Museum. Published August 19, 1909. Octavo. Pages 457–460.

1877. The Geologic Work of Mangroves in Southern Florida. By T. Wayland Vaughan, Custodian of Madreporarian Corals, U. S. National Museum; Supervising Geologist in Charge of Coastal Plain Investigations, U. S. Geological Survey. Published September 15, 1909. Octavo. Pages 461–464, with Plates 46 to 52.

1878. Crystallographic Notes on Calcite. By J. E. Pogue, Assistant Curator, Division of Mineralogy, U. S. National Museum. Published September 24, 1909. Octavo. Pages 465–468, with Plates 53 and 54.

1879. A New Rodent of the Genus Georychus. By Edmund Heller, Field Naturalist, Smithsonian African Expedition. Published September 24, 1909. Octavo. Pages 469–470, with Plate 55.

1880. Two New Rodents from British East Africa. By Edmund Heller, Field Naturalist, Smithsonian African Expedition. Published November 13, 1909. Pages 471–472, with Plate 56.

1881. A Heretofore Undescribed Stony Meteorite from Thomson, McDuffie County, Georgia. By George P. Merrill, Head Curator, Department of Geology, U. S. National Museum. Published December 2, 1909. Octavo. Pages 473–476. Plates 57 and 58.

1882. On a Remarkable Cube of Pyrite Carrying Crystallized Gold and Galena of Unusual Habit. By Joseph E. Pogue, Assistant Curator, Division of Mineralogy, U. S. National Museum. Published December 22, 1909. Octavo. Pages 477–484, with Plate 59.

1883. A New Carnivore of British East Africa. By Gerrit S. Miller, jr., Curator, Division of Mammals, U. S. National Museum. Published December 18, 1909. Octavo. Pages 485–487, with Plates 60 to 62.

1884. Description of Fossil Plants from the Mesozoic and Cenozoic of North America. I. By F. H. Knowlton. Published January 11, 1910. Octavo. Pages 489–496, with Plates 63 and 64.

1885. Two New Genera of Murine Rodents. By Gerrit S. Miller, jr., Curator, Division of Mammals, U. S. National Museum. Published January 12, 1910. Octavo. Pages 497–498.

1886. A Shelter for Observers on Mount Whitney. By C. G. Abbot, Director of the Smithsonian Astrophysical Observatory. Published January 12, 1910. Octavo. Pages 499–506, with Plates 65 and 66.

1887. List of Publications, continued from list in Quarterly Issue, volume 5, part 3. Published January 21, 1910. Octavo. Pages 507–509.

In the regular series of Smithsonian Miscellaneous Collections the following were published, during the year:

1869. The Mechanics of the Earth's Atmosphere (a collection of translations). Third Collection. By Cleveland Abbe. Hodgkins Fund. Published 1909. Octavo. Pages IV, 617. Volume 51, Number 4.

1870. Landmarks of Botanical History, Part I, Prior to 1562 A. D. By Edward L. Greene. Published 1909. Octavo. Pages 329. Part of volume 54.

1920. Bibliography of Aeronautics. By Paul Brockett. Hodgkins Fund. Published 1910. Octavo. Pages XIV, 940. Volume 55.

1922. Development of the Brain of the American Alligator; The Paraphysis and Hypophysis. By Albert M. Reese. Published March 1, 1910. Octavo. Pages 20, with 5 plates. Volume 54, Number 2.

1923. Constants of Nature. Part 5, A Recalculation of Atomic Weights. Third edition. By Frank Wigglesworth Clarke. Published May 6, 1910. Octavo. Pages IV, 548. Volume 54, Number 3.

1924. Five New Rodents from British East Africa. By Edmund Heller. Published February 28, 1910. Octavo. Pages 2+4, with 2 plates. Volume 54, Number 4.

1925. A New Rodent of the Genus Saccostomus from British East Africa. By Gerrit S. Miller, jr. Published February 28, 1910. Octavo. Pages 2+2, with 1 plate. Volume 54, Number 5.

1926. A New Sable Antelope from British East Africa. By Edmund Heller. Published March 3, 1910. Octavo. Pages 2+2. Volume 54, Number 6.

1927. Description of a New Species of Hippopotamus. By Gerrit S. Miller, jr. Published March 28, 1910. Octavo. Pages 2+3, with 4 plates. Volume 54, Number 7.

1929. The Scales of the African Characinid Fishes. By T. D. A. Cockerell. Published May 7, 1910. Octavo. Pages 2+10, with 2 plates. Volume 56, Number 1.

1930. Mammals Collected by John J. White in British East Africa. By N. Hollister. Published March 31, 1910. Octavo. Pages 2+12, with 2 plates. Volume 56, Number 2.

1931. The Scales of the Mormyrid Fishes, with Remarks on Albula and Elops. By T. D. A. Cockerell. Published May 7, 1910. Pages 2+4. Volume 56, Number 3.

1933. Upper Yukon Native Customs and Folk-Lore. By Ferdinand Schmitter. Published May 26, 1910. Octavo. Pages 2+30. Volume 56, Number 4.

1935. A Preliminary Study of Chemical Denudation. By Frank Wigglesworth Clarke. Published June 29, 1910. Octavo. Pages 2+19. Volume 56. Number 5.

1936. The Age of the Earth. By George F. Becker. Published June 29, 1910. Octavo. Pages 2+28. Volume 56, Number 6.

1937. Description of a New Subspecies of African Monkey of the Genus Cercopithecus. By D. G. Elliot. Publishd June 11, 1910. Octavo. Pages 2+1. Volume 56, Number 7.

Of the regular series of Smithsonian Miscellaneous Collections in press at the close of the year, there were:

1934. Cambrian Geology and Paleontology. Number 6: Olenellus and other Genera of the Mesonacidæ. By Charles D. Walcott. Volume 53, Number 6.

1939. Cambrian Geology and Paleontology. Number 7: Pre-Cambrian Rocks of the Bow River Valley, Alberta, Canada. By Charles D. Walcott. Volume 53, Number 7.

1940. Cambrian Geology and Paleontology. II. Abrupt Appearance of the Cambrian Fauna on the North American Continent. By Charles D. Walcott. Volume 57, Number 1.

1941. Notes on a Horn-feeding Lepidopterous Larva from Africa. By August Busck. Volume 56, Number 8.

III. SMITHSONIAN ANNUAL REPORTS.

The Annual Report for 1908, though partly in type at the beginning of the fiscal year, was not published until late in the fall.

1917. Annual Report of the Board of Regents of the Smithsonian Institution, showing Operations, Expenditures, and Conditions of the Institution for the year ending June 30, 1908. Octavo. Pages x, 801, with 101 plates. Containing publications 1855, 1856, and 1888 to 1914.

The following papers, forming the General Appendix of the Annual Report of the Board of Regents for 1908, were issued in pamphlet form:

1888. The Present Status of Military Aeronautics. By Maj. George O. Squier, U. S. Army. Pages 117–144, with 23 plates.

1889. Aviation in France in 1908. By Pierre-Roger Jourdain. Pages 145–159.

1890. Wireless Telephony. By R. A. Fessenden. Pages 161–195, with 20 plates.
1891. Phototelegraphy. By Henri Armagnat. Pages 197–207.
1892. The Gramophone and the Mechanical Recording and Reproduction of Musical Sounds. By Lovell W. Reddie. Pages 209 to 231, with 2 plates.
1893. On the Light Thrown by Recent Investigation on Electricity on the Relation between Matter and Ether. By J. J. Thomson. Pages 233–244.
1894. Development of General and Physical Chemistry During the Last Forty Years. By W. Nernst. Pages 245–253.
1895. Development of Technological Chemistry During the Last Forty Years. By O. H. Witt. Pages 255–262.
1896. Twenty Years' Progress in Explosives. By Oscar Guttmann. Pages 263–300, with 9 plates.
1897. Recent Research in the Structure of the Universe. By J. C. Kapteyn. Pages 301–319.
1898. Solar Vortices and Magnetism in Sun Spots. By C. G. Abbot. Pages 321–338, with 5 plates.
1899. Climatic Variations: Their Extent and Causes. By J. W. Gregory. Pages 339–354.
1900. Uranium and Geology. By Prof. John Joly. Pages 355–384, with 1 plate.
1901. An Outline Review of the Geology of Peru. By George I. Adams. Pages 385–430, with 5 plates.
1902. Our Present Knowledge of the Earth. By E. Wiechert. Pages 431–449.
1903. The Antarctic Question—Voyages to the South Pole since 1898. By J. Machat. Pages 451–480, with 1 plate.
1904. Some Geographical Aspects of the Nile. By Capt. H. G. Lyons. Pages 481–503, with 5 plates.
1905. Heredity, and the Origin of Species. By Daniel Trembly MacDougal. Pages 505–523, with 1 plate.
1906. Cactaceæ of Northeastern and Central Mexico, together with a Synopsis of the Principal Mexican Genera. By William Edwin Safford. Pages 525–563, with 15 plates. (A separate edition with index was also published.)
1907. Angler Fishes: Their Kinds and Ways. By Theodore Gill. Pages 565–615.
1908. The Birds of India. By Douglas Dewar. Pages 617–639.
1909. The Evolution of the Elephant. By Richard S. Lull. Pages 641–675, with 2 plates.
1910. Excavations at Boghaz-Keui in the Summer of 1907. By Hugo Winckler and O. Puchstein. Pages 677–696, with 10 plates.
1911. Malaria in Greece. By Ronald Ross. Pages 697–710.
1912. Carl von Linnè as a Geologist. By A. G. Nathorst. Pages 711–743.
1913. Life and Work of Lord Kelvin. The Kelvin Lecture. By Sylvanus P. Thompson. Pages 745–768, with 1 plate.
1914. The Work of Henri Becquerel. By André Broca. Pages 769–785, with 1 plate.

The report of the executive committee and Proceedings of the Board of Regents of the Institution, as well as the report of the Secretary, for the fiscal year ending June 30, 1909, both forming part of the annual report of the Board of Regents to Congress, was printed in pamphlet form and published at the December meeting of the Board of Regents, as follows:

1915. Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1909. Pages iii, 95.
1916. Report of the Executive Committee and Proceedings of the Board of Regents for the year ending June 30, 1909. Pages 19.

The Smithsonian Report for 1909 was partly in type at the close of the fiscal year. In the General Appendix are the following papers:

The Future of Mathematics, by Henri Poincaré.
What Constitutes Superiority in an Airship, by Paul Renard.
Researches in Radiotelegraphy, by J. A. Fleming.
Recent Progress in Physics, by Sir J. J. Thomson.
Production of Low Temperatures, and Refrigeration, by L. Marchis.
The Nitrogen Question from the Military Standpoint, by Charles E. Munroe.
Simon Newcomb, by Ormond Stone.
Solar-radiation Researches by Jules César Janssen, by H. de la Baume Pluvinel.
The Return of Halley's Comet, by W. W. Campbell.
The Upper Air, by E. Gold and W. A. Harwood.
The Formation, Growth, and Habit of Crystals, by Paul Gaubert.
The Distribution of Elements in Igneous Rocks, by Henry S. Washington.
The Mechanism of Volcanic Action, by H. J. Johnston-Lavis.
Conservation of Natural Resources, by James Douglas.
The Antarctic Land of Victoria, by Maurice Zimmermann.
Some Results of the British Antarctic Expedition, 1907–9, by E. H. Shackleton.
The Oceanography of the Sea of Greenland, by D. Damas.
From the Niger, by Lake Chad, to the Nile, by Lieut. Boyd Alexander.
Mesopotamia: Past, Present, and Future, by Sir William Willcocks.
Albert Gaudry and the Evolution of the Animal Kingdom, by Ph. Glangeaud.
Charles Darwin, by August Weismann.
Present Problems in Plant Ecology: Problems of Local Distribution in Arid Regions, by Volney M. Spalding.
The Instinct of Self-concealment and the Choice of Colors in the Crustacea, by Romuald Minkiewicz.
The Origin and Development of Parasitical Habits in the Cuculidæ, by C. L. Barrett.
Some Remarks on the Protective Resemblance of South African Birds, by Alwin Haagner.
An Inquiry into the History of the Current English Names of North American Land Birds, by Spencer Trotter.
Condition of Wild Life in Alaska, by Madison Grant.
Recent Discoveries Bearing on the Antiquity of Man in Europe, by George Grant MacCurdy.
European Population of the United States, by W. Z. Ripley.
The Republic of Panama and its People, by Eleanor Yorke Bell.
Ceramic Decoration: Its Evolution and Applications, by Louis Franchet.
Some Notes on Roman Architecture, by F. T. Baggallay.
The Relation of Science to Human Life, by Adam Sedgwick.
Intellectual Work among the Blind, by Pierre Villey.
The Relation of Mosquitoes, Flies, Ticks, Fleas, and other Arthropods to Pathology, by G. Marotel.
Natural Resistance to Infectious Disease and its Reinforcement, by Simon Flexner.

IV. SPECIAL PUBLICATIONS.

Only one special publication, in the form of a small pamphlet, was issued during the year:

The Smithsonian Institution, at Washington, for the Increase and Diffusion of Knowledge among Men.

There were two special publications nearly ready at the close of the year:

1932. Classified List of Smithsonian Publications available for distribution May, 1910.

1938. Opinions Rendered by the International Commission on Zoological Nomenclature, Opinions 1 to 25.

V. PUBLICATIONS OF THE UNITED STATES NATIONAL MUSEUM.

The publications of the National Museum are: (*a*) The annual report, forming a separate volume of the report to Congress by the Board of Regents of the Smithsonian Institution; (*b*) the Proceedings of the United States National Museum; (*c*) the Bulletin of the United States National Museum; and (*d*) the Contributions from the United States National Herbarium. The editorship of these publications is in charge of Dr. Marcus Benjamin.

The publications issued during the year are enumerated in the report on the National Museum. These included volume 37 of the Proceedings, containing Museum papers numbered 1695 to 1724, and volume 38, papers numbered 1725–1749.

Eight Bulletins were issued, as follows:

No. 65. Dendroid Graptolites of the Niagaran Dolomites at Hamilton, Ontario. By Ray S. Bassler.

No. 66. A Monographic Revision of the Twisted Winged Insects comprising the Order Strepsiptera Kirby. By W. Dwight Pierce.

No. 67. Directions for Collection and Preserving Insects. By Nathan Banks.

No. 68. A Monograph of West American Pyramidellid Mollusks. By William Healy Dall and Paul Bartsch.

No. 69. The Tænioid Cestodes of North American Birds. By Brayton Howard Ransom.

No. 70. The National Gallery of Art, Department of Fine Arts of the National Museum. By Richard Rathbun.

No. 71. A Monograph of the Foraminifera of the North Pacific Ocean. Part I, Astrorhizidæ and Lituolidæ. By Joseph Augustine Cushman.

No. 72. Catalogue of Nearctic Spiders. By Nathan Banks.

In the series of Contributions from the National Herbarium there appeared:

Volume 12, Part 10. Miscellaneous papers, by J. N. Rose, N. L. Britton, John M. Coulter, and G. N. Collins.

Volume 13, Part 2. Three New Species of Echeveria, by J. N. Rose and J. A. Purpus.

Volume 13, Part 3. The Grasses of Alaska, by F. Lamson-Scribner and Elmer D. Merrill.

Volume 13, Part 4. New or Noteworthy Plants from Colombia and Central America—2, by Henry Pittier.

Volume 13, Part 5. Relationships of the Ivory Palms, by O. F. Cook.

Volume 14, Part 1. The Lichens of Minnesota, by Bruce Fink.

Preliminary pages and index of volume 12, Systematic Investigations and Bibliography.

VI. PUBLICATIONS OF THE BUREAU OF AMERICAN ETHNOLOGY.

The publications of the Bureau are discussed in detail in another appendix of the Secretary's report. The editorial work is in charge of Mr. J. G. Gurley. The following five bulletins were published by the Bureau during the year:

Bulletin 38. Unwritten Literature of Hawaii. The sacred songs of the Hula, compiled and translated, with notes and an account of the Hula, by Nathaniel B. Emerson, A. M., M. D. 1909. Octavo. Pages 288, with 24 plates, 3 figures, and 14 musical pieces.

Bulletin 39. Tlingit Myths and Texts, by John R. Swanton. 1909. Octavo. Pages VIII, 451.

Bulletin 41. Antiquities of the Mesa Verde National Park: Spruce-Tree House, by J. Walter Fewkes. 1909. Octavo. Pages VIII, 57, with 21 plates and 37 figures.

Bulletin 48. The Choctaw of Bayou Lacombe, St. Tammany Parish, Louisiana, by David I. Bushnell, jr. 1909. Octavo. Pages 37, with 22 plates and 1 figure.

Bulletin 49. List of the publications of the Bureau of American Ethnology, with index to authors and titles. 1910. Octavo. Pages 32.

VII. PUBLICATIONS OF THE SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

There were no new publications issued by the Astrophysical Observatory during the year.

VIII. AMERICAN HISTORICAL ASSOCIATION.

The manuscript of Volumes I and II of the Annual Report of the American Historical Association for 1907 was sent to the Public Printer on September 10, 1908, and the volumes were published in July, 1909.

Volume I contained the following papers:

Report of the Proceedings of the Twenty-third Annual Meeting of the American Historical Association, by Charles H. Haskins, corresponding secretary.

Report of the Proceedings of the Pacific Coast Branch, by Clyde A. Duniway.

Report of Conference on the Relation of Geography and History, by Frederick J. Turner.

Report of Conference on the Work of State and Local Historical Societies, by Evarts B. Greene.

Reports on special conferences on Mediæval European History, on Modern European History, on Oriental History and Politics, on American Constitutional History, and on United States History since 1865, by the respective chairmen of the conferences.

Proposals for an Indian State, 1778–1878, by Annie H. Abel.

The Pacific Railroads and the Disappearance of the Frontier in America, by Frederic L. Paxson.

The Sentiment of the People of California with Respect to the Civil War, by John J. Earle.

The Relation of the U. S. to Latin America, by Bernard Moses;

Legazpi and Philippine Colonization, by James A. Robertson;

Report of the Public Archives Commission;

Francisco de Miranda and the Revolutionizing of Spanish America, by William S. Robertson.

Volume 2 contained the report of the Historical Manuscripts Commission, comprising Diplomatic Archives of the Republic of Texas, I, edited by George P. Garrison.

The manuscript of Volume I of the report for 1908 was sent to the printer on June 17, 1909, and the manuscript of Volume II was received from the secretary of the association and sent to the Public Printer in April, 1910, but neither volume had been completed at the close of the fiscal year.

IX. DAUGHTERS OF THE AMERICAN REVOLUTION.

The manuscript of the annual report of the National Society of the Daughters of the American Revolution for the year ending October 11, 1909, was received on April 18, 1910, and communicated to Congress in accordance with the act of incorporation of that society.

X. SMITHSONIAN ADVISORY COMMITTEE ON PRINTING AND PUBLICATION.

The editor has continued to serve as secretary of the Smithsonian advisory committee on printing and publication. To this committee have been referred the manuscripts proposed for publication by the various branches of the Institution as well as those offered for printing in the Smithsonian Miscellaneous Collections. The committee also considered forms of routine blanks and various matters pertaining to printing and publication, including the qualities of paper suitable for text and plates. Twenty-five meetings were held and 106 manuscripts were acted upon.

Respectfully submitted.

A. HOWARD CLARK, *Editor.*

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.